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ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Kiowa County, Kansas: Published

Map symbol	Soil name	Acres	Percent
007CF	Clairemont Soils, Channeled	10	*
025AB	Albion–Shellabarger Sandy Loams, 6 To 12 Percent Slopes	390	*
025PG	Penden Clay Loam, 7 To 15 Percent Slopes	2	*
025SH	Shellabarger Loam, 2 To 5 Percent Slopes	64	*
033AC	Abilene Silt Loam, 1 To 3 Percent Slopes	1,421	0.3
033CK	Case Clay Loam, 3 To 7 Percent Slopes	452	*
033CS	Clark Clay Loam, 1 To 3 Percent Slopes	282	*
033CT	Clark Clay Loam, 3 To 6 Percent Slopes	192	*
033ED	Elandco Silt Loam, Occasionally Flooded	226	*
033EF	Elandco Silt Loam, Channeled	849	0.2
033KC	Kanza Loamy Fine Sand, Frequently Flooded	179	*
033LN	Lincoln Loamy Sand, Occasionally Flooded	496	0.1
033QR	Quinlan – Woodward Loams, 6 To 15 Percent Slopes	126	*
033SH	Shellabarger Sandy Loam, 1 To 3 Percent Slopes	7	*
033SM	Shellabarger Sandy Loam, 3 To 6 Percent Slopes	123	*
047PA	Platte Soils, Occasionally Flooded	12	*
047WA	Waldeck Fine Sandy Loam, Occasionally Flooded	31	*
057HD	Holdrege Fine Sandy Loam, 1 To 3 Percent Slopes	9	*
057PR	Pratt Loamy Fine Sand, 3 To 10 Percent Slopes	229	*
057PT	Pratt–Tivoli Loamy Fine Sands, 4 To 15 Percent Slopes	216	*
057TV	Tivoli Fine Sand, 5 To 20 Percent Slopes	2,413	0.5
151BC	Blanket Silty Clay Loam, 1 To 4 Percent Slopes, Eroded	6	*
151BH	Blanket Silt Loam, 1 To 3 Percent Slopes	10	*
151FE	Farnum Fine Sandy Loam, 0 To 1 Percent Slopes	11	*
151NM	Naron Loam, 1 To 3 Percent Slopes	27	*
151SE	Shellabarger Fine Sandy Loam, 1 To 4 Percent Slopes	7	*
1324	Carway And Carbika Soils, 0 To 1 Percent Slopes	29	*
1725	Farnum And Funmar Loams, 0 To 1 Percent Slopes	2,122	0.5
1726	Funmar And Farnum Loams, 1 To 3 Percent Slopes	858	0.2
1985	Hayes Fine Sandy Loam, 1 To 5 Percent Slopes	1,093	0.2
1986	Hayes–Solvay Loamy Fine Sands, 0 To 5 Percent Slopes	560	0.1
1988	Hayes Loamy Fine Sand, 5 To 10 Percent Slopes	2,141	0.5
2556	Langdon Fine Sand, 0 To 15 Percent Slopes	2,791	0.6
3512	Saltcreek And Naron Fine Sandy Loams, 1 To 3 Percent Slopes	2,501	0.5
3540	Solvay Loamy Fine Sand, 0 To 2 Percent Slopes	678	0.1
3640	Tivin Fine Sand, 10 To 30 Percent Slopes	768	0.2
An	Albion Sandy Loam, 1 To 4 Percent Slopes	1,521	0.3
As	Albion–Shellabarger Sandy Loams, 4 To 15 Percent Slopes	11,411	2.5
At	Attica Loamy Fine Sand, 1 To 4 Percent Slopes	21,389	4.6
Ax	Attica–Carwile Complex, 0 To 4 Percent Slopes	4,791	1.0
BOP	Borrow Pits	---	*
Ca	Canadian Fine Sandy Loam, Rarely Flooded	1,212	0.3
Cc	Carwile Fine Sandy Loam, 0 To 1 Percent Slopes	3,094	0.7
Ce	Case Clay Loam, 2 To 7 Percent Slopes	7,202	1.6
Cf	Case Clay Loam, 7 To 15 Percent Slopes	20,790	4.5
Cg	Case–Canlon Complex, 7 To 20 Percent Slopes	4,293	0.9
Ck	Clark Loam, 1 To 3 Percent Slopes	5,707	1.2
Cm	Clark Loam, 3 To 7 Percent Slopes	6,249	1.4
Co	Coly Silt Loam, 4 To 9 Percent Slopes	22,238	4.8
Cp	Coly Silt Loam, 20 To 40 Percent Slopes	2,965	0.6
Ct	Coly–Tobin Silt Loams, 0 To 20 Percent Slopes	14,148	3.1
Da	Dale Silt Loam, Rarely Flooded	5,773	1.2
Fa	Farnum Loam, 0 To 1 Percent Slopes	8,758	1.9
Fb	Farnum Loam, 1 To 3 Percent Slopes	13,063	2.8
Ha	Harney Silt Loam, 0 To 1 Percent Slopes	33,698	7.3
Hb	Harney Silt Loam, 1 To 3 Percent Slopes	41,897	9.1
He	Hedville–Rock Outcrop Complex, 15 To 30 Percent Slopes	602	0.1
Ho	Holdrege Silt Loam, 0 To 1 Percent Slopes	4,102	0.9
Hp	Holdrege Silt Loam, 1 To 3 Percent Slopes	20,796	4.5
Kr	Krier Sandy Loam, Occasionally Flooded	150	*
Lh	Lancaster–Hedville Complex, 4 To 20 Percent Slopes	5,589	1.2
Ln	Lincoln Sandy Loam, Occasionally Flooded	3,838	0.8
M–W	Miscellaneous Water	25	*
Na	Naron Fine Sandy Loam, 0 To 1 Percent Slopes	5,031	1.1
Nb	Naron Fine Sandy Loam, 1 To 3 Percent Slopes	13,992	3.0
Ne	Ness Silty Clay	735	0.2
Nw	New Cambria Silty Clay, Rarely Flooded	1,265	0.3
Oe	Wellsford Clay, 6 To 25 Percent Slopes	17,973	3.9
Pe	Plevna Loam, Frequently Flooded	1,645	0.4
Pr	Pratt Loamy Fine Sand, 1 To 5 Percent Slopes	52,320	11.3
Ps	Pratt Loamy Fine Sand, 5 To 10 Percent Slopes	23,794	5.1
Pt	Pratt–Tivoli Loamy Fine Sands, 5 To 15 Percent Slopes	38,549	8.3
Qw	Quinlan–Woodward Loams, 6 To 25 Percent Slopes	3,932	0.9
SAP	Sand Pits	---	*
Sh	Shellabarger Loam, 2 To 6 Percent Slopes	3,439	0.7
Th	Tivoli Fine Sand, 15 To 30 Percent Slopes	7,899	1.7
To	Tobin Silt Loam, Channeled	2,584	0.6
Ts	Tobin Silt Loam, Occasionally Flooded	3,200	0.7
Uc	Uly Silt Loam, 3 To 7 Percent Slopes	9,868	2.1
W	Water	156	*
Wa	Waldeck Loam, Occasionally Flooded	3,100	0.7
	Total	476,114	102.9

* Less than 0.1 percent.

NONTECHNICAL SOIL DESCRIPTIONS
Kiowa County, Kansas

Nontechnical soil descriptions describe soil properties or management considerations specific to a soil map unit or group of map units, shown in the NonTechnical Descriptions report. These descriptions are written in terminology that Non-technical users of soil survey information can understand.
Nontechnical soil descriptions are a powerful tool for creating reports. These high quality, easy to read reports can be generated by conservation planners and other NRCS employees for distribution to land users. Soil map unit descriptions and National Soil Information System records are the basis for these descriptions.

007CF Clairemont Soils, Channeled

Clairemont soil makes up 100 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a nearly level to gently sloping flood plain on river valley. The runoff class is negligible. The parent material consists of calcareous silty alluvium. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a low shrink swell potential. This soil is frequently flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Lowland (pe20-25) range site. It is in the nonirrigated land capability classification 5w.

025AB Albion-Shellabarger Sandy Loams, 6 To 12 Percent Slopes

Albion soil makes up 60 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a moderately sloping to strongly sloping paleoterrace on tableland. The runoff class is low. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderately rapid. It has a low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 2 percent calcium carbonate. This soil is in the Sandy (pe20-25) range site. It is in the nonirrigated land capability classification 6e.

Shellabarger soil makes up 40 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a moderately sloping to strongly sloping paleoterrace on tableland. The runoff class is low. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 2 percent calcium carbonate. This soil is in the Sandy (pe20-25) range site. It is in the nonirrigated land capability classification 6e.

025PG Penden Clay Loam, 7 To 15 Percent Slopes

Penden soil makes up 100 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a strongly sloping to moderately steep break on tableland. The runoff class is medium. The parent material consists of residuum. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 30 percent calcium carbonate. This soil is in the Limy Upland (pe20-25) range site. It is in the nonirrigated land capability classification 6e.

025SH Shellabarger Loam, 2 To 5 Percent Slopes

Shellabarger soil makes up 100 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping paleoterrace on tableland. The runoff class is low. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a moderate available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Sandy (pe20-25) range site. It is in the nonirrigated land capability classification 3e.

033AC Abilene Silt Loam, 1 To 3 Percent Slopes

Abilene soil makes up 100 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a gently sloping paleoterrace on tableland. The runoff class is medium. The parent material consists of calcareous old alluvium. This soil is well drained. The slowest permeability is moderately slow. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe20-25) range site. This soil is in the irrigated land capability class 2e. It is in the nonirrigated land capability classification 2e.

033CK Case Clay Loam, 3 To 7 Percent Slopes

Case soil makes up 100 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a moderately sloping paleoterrace on tableland. The runoff class is low. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 25 percent calcium carbonate. This soil is in the Limy Upland (pe20-25) range site. It is in the nonirrigated land capability classification 4e.

NONTECHNICAL SOIL DESCRIPTIONS--Continued
Kiowa County, Kansas

033CS Clark Clay Loam, 1 To 3 Percent Slopes

Clark soil makes up 100 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a gently sloping paleoterrace on river valley. The runoff class is low. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 45 percent calcium carbonate. This soil is in the Limy Upland (pe20-25) range site. It is in the nonirrigated land capability classification 3e.

033CT Clark Clay Loam, 3 To 6 Percent Slopes

Clark soil makes up 100 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a moderately sloping paleoterrace on river valley. The runoff class is low. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 45 percent calcium carbonate. This soil is in the Limy Upland (pe20-25) range site. It is in the nonirrigated land capability classification 4e.

033ED Elandco Silt Loam, Occasionally Flooded

Elandco soil makes up 100 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is negligible. The parent material consists of loamy alluvium. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a moderate shrink swell potential. This soil is occasionally flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Lowland (pe20-25) range site. It is in the nonirrigated land capability classification 2w.

033EF Elandco Silt Loam, Channeled

Elandco soil makes up 100 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is negligible. The parent material consists of loamy alluvium. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a moderate shrink swell potential. This soil is frequently flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Lowland (pe20-25) range site. It is in the nonirrigated land capability classification 6w.

033KC Kanza Loamy Fine Sand, Frequently Flooded

Kanza soil makes up 100 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is negligible. The parent material consists of loamy alluvium. This soil is poorly drained. The slowest permeability is rapid. It has a low available water capacity and a low shrink swell potential. This soil is frequently flooded and is not ponded. The top of the seasonal high water table is at 18 inches. It is in the nonirrigated land capability classification 5w.

033LN Lincoln Loamy Sand, Occasionally Flooded

Lincoln soil makes up 100 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is negligible. The parent material consists of sandy alluvium. This soil is somewhat excessively drained. The slowest permeability is rapid. It has a low available water capacity and a low shrink swell potential. This soil is occasionally flooded and is not ponded. The top of the seasonal high water table is at 66 inches. This soil is in the Sandy Lowland (pe20-25) range site. It is in the nonirrigated land capability classification 6w.

033QR Quinlan - Woodward Loams, 6 To 15 Percent Slopes

Quinlan soil makes up 55 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep hillslope on upland. The runoff class is medium. The parent material consists of residuum. The soil is 10 to 20 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is moderate. It has a very low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Shallow Prairie (pe20-25) range site. It is in the nonirrigated land capability classification 6e.

Woodward soil makes up 45 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep hillslope on upland. The runoff class is medium. The parent material consists of residuum. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is moderate. It has a low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Loamy Upland (pe20-25) range site. It is in the nonirrigated land capability classification 6e.

033SH Shellabarger Sandy Loam, 1 To 3 Percent Slopes

Shellabarger soil makes up 100 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a gently sloping paleoterrace on river valley. The runoff class is low. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a moderate available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Sandy (pe20-25) range site. It is in the nonirrigated land capability classification 2e.

NONTECHNICAL SOIL DESCRIPTIONS--Continued
Kiowa County, Kansas

033SM Shellabarger Sandy Loam, 3 To 6 Percent Slopes

Shellabarger soil makes up 100 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a moderately sloping paleoterrace on river valley. The runoff class is low. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a moderate available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Sandy (pe20-25) range site. It is in the nonirrigated land capability classification 3e.

047PA Platte Soils, Occasionally Flooded

Platte soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is very low. The parent material consists of loamy alluvium. This soil is somewhat poorly drained. The slowest permeability is moderate. It has a low available water capacity and a low shrink swell potential. This soil is occasionally flooded and is not ponded. The top of the seasonal high water table is at 18 inches. This soil is in the Subirrigated (pe21-28) range site. This soil is in the irrigated land capability class 4w. It is in the nonirrigated land capability classification 4w.

047WA Waldeck Fine Sandy Loam, Occasionally Flooded

Waldeck soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is negligible. The parent material consists of loamy alluvium. This soil is somewhat poorly drained. The slowest permeability is moderately rapid. It has a moderate available water capacity and a low shrink swell potential. This soil is occasionally flooded and is not ponded. The top of the seasonal high water table is at 36 inches. This soil is in the Subirrigated (pe21-28) range site. It is in the nonirrigated land capability classification 3w.

057HD Holdrege Fine Sandy Loam, 1 To 3 Percent Slopes

Holdrege soil makes up 100 percent of the map unit. This map unit is in the Rolling Plains and Breaks Major Land Resource Area. This soil occurs on a gently sloping plain on tableland. The runoff class is low. The parent material consists of calcareous loess. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Loamy Upland (pe20-26) range site. This soil is in the irrigated land capability class 2e. It is in the nonirrigated land capability classification 2e.

057PR Pratt Loamy Fine Sand, 3 To 10 Percent Slopes

Pratt soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a moderately sloping to strongly sloping dune on paleoterrace on river valley. The runoff class is very low. The parent material consists of sandy eolian deposits. This soil is well drained. The slowest permeability is rapid. It has a low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Sands (pe20-26) range site. This soil is in the irrigated land capability class 3e. It is in the nonirrigated land capability classification 4e.

057PT Pratt-Tivoli Loamy Fine Sands, 4 To 15 Percent Slopes

Pratt soil makes up 60 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep dune on paleoterrace on river valley. The runoff class is very low. The parent material consists of sandy eolian deposits. This soil is well drained. The slowest permeability is rapid. It has a low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Sands (pe20-26) range site. This soil is in the irrigated land capability class 3e. It is in the nonirrigated land capability classification 4e.

Tivoli soil makes up 40 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep dune on paleoterrace on river valley. The runoff class is very low. The parent material consists of sandy eolian deposits. This soil is excessively drained. The slowest permeability is rapid. It has a low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Sands (pe20-26) range site. It is in the nonirrigated land capability classification 6e.

057TV Tivoli Fine Sand, 5 To 20 Percent Slopes

Tivoli soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep dune on paleoterrace on river valley. The runoff class is very low. The parent material consists of sandy eolian deposits. This soil is excessively drained. The slowest permeability is rapid. It has a low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Choppy Sands (pe20-26) range site. It is in the nonirrigated land capability classification 7e.

151BC Blanket Silty Clay Loam, 1 To 4 Percent Slopes, Eroded

Blanket soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping paleoterrace on river valley. The runoff class is medium. The parent material consists of clayey alluvium. This soil is well drained. The slowest permeability is moderately slow. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe21-28) range site. It is in the nonirrigated land capability classification 3e.

151BH Blanket Silt Loam, 1 To 3 Percent Slopes

Blanket soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping paleoterrace on river valley. The runoff class is medium. The parent material consists of clayey alluvium. This soil is well drained. The slowest permeability is moderately slow. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe21-28) range site. It is in the nonirrigated land capability classification 2e.

151FE Farnum Fine Sandy Loam, 0 To 1 Percent Slopes

Farnum soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level paleoterrace on river valley. The runoff class is very low. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Sandy (pe21-28) range site. This soil is in the irrigated land capability class 1 It is in the nonirrigated land capability classification 2e.

151NM Naron Loam, 1 To 3 Percent Slopes

Naron soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping dune on paleoterrace on river valley. The runoff class is very low. The parent material consists of loamy eolian deposits. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Sandy (pe21-28) range site. This soil is in the irrigated land capability class 2e. It is in the nonirrigated land capability classification 2e.

151SE Shellabarger Fine Sandy Loam, 1 To 4 Percent Slopes

Shellabarger soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping paleoterrace on river valley. The runoff class is very low. The parent material consists of loamy alluvium. This soil is well drained. The slowest permeability is moderate. It has a moderate available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Sandy (pe21-28) range site. It is in the nonirrigated land capability classification 2e.

1324 Carway And Carbika Soils, 0 To 1 Percent Slopes

Carway soil makes up 50 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level interdune on depression on paleoterrace on river valley. The runoff class is very low. The parent material consists of loamy eolian deposits over alluvium. This soil is somewhat poorly drained. The slowest permeability is very slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is frequent ponded. The top of the seasonal high water table is at 0 inches. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Subirrigated (pe21-28) range site. It is in the nonirrigated land capability classification 2w.

Carbika soil makes up 30 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level interdune on depression on paleoterrace on river valley. The runoff class is very low. The parent material consists of loamy eolian deposits over alluvium. This soil is poorly drained. The slowest permeability is very slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is frequent ponded. The top of the seasonal high water table is at 0 inches. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Subirrigated (pe21-28) range site. It is in the nonirrigated land capability classification 2w.

1725 Farnum And Funmar Loams, 0 To 1 Percent Slopes

Funmar soil makes up 40 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level paleoterrace on river valley. The runoff class is very low. The parent material consists of loamy alluvium over alluvium. This soil is moderately well drained. The slowest permeability is slow. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Loamy Upland (pe21-28) range site. This soil is in the irrigated land capability class 1 It is in the nonirrigated land capability classification 2c.

Farnum soil makes up 40 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level paleoterrace on river valley. The runoff class is very low. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe21-28) range site. This soil is in the irrigated land capability class 1 It is in the nonirrigated land capability classification 2c.

NONTECHNICAL SOIL DESCRIPTIONS--Continued
Kiowa County, Kansas

1726 Funmar And Farnum Loams, 1 To 3 Percent Slopes

Farnum soil makes up 40 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping paleoterrace on river valley. The runoff class is low. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe21-28) range site. This soil is in the irrigated land capability class 1 It is in the nonirrigated land capability classification 2c.

Funmar soil makes up 40 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping paleoterrace on river valley. The runoff class is low. The parent material consists of loamy alluvium over alluvium. This soil is moderately well drained. The slowest permeability is slow. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Loamy Upland (pe21-28) range site. This soil is in the irrigated land capability class 1 It is in the nonirrigated land capability classification 2c.

1985 Hayes Fine Sandy Loam, 1 To 5 Percent Slopes

Hayes soil makes up 60 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping dune on paleoterrace on river valley. The runoff class is low. The parent material consists of loamy eolian deposits over clayey alluvium. This soil is well drained. The slowest permeability is slow. It has a moderate available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Sandy (pe21-28) range site. This soil is in the irrigated land capability class 3e. It is in the nonirrigated land capability classification 3e.

1986 Hayes-Solvay Loamy Fine Sands, 0 To 5 Percent Slopes

Hayes soil makes up 55 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level to moderately sloping dune on paleoterrace on river valley. The runoff class is low. The parent material consists of loamy eolian deposits over clayey alluvium. This soil is well drained. The slowest permeability is slow. It has a moderate available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Sandy (pe21-28) range site. This soil is in the irrigated land capability class 3e. It is in the nonirrigated land capability classification 3e.

Solvay soil makes up 20 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level to gently sloping interdune on paleoterrace on river valley. The runoff class is very low. The parent material consists of loamy eolian deposits over alluvium. This soil is somewhat poorly drained. The slowest permeability is moderately slow. It has a high available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 36 inches. This soil is in the Subirrigated (pe21-28) range site. It is in the nonirrigated land capability classification 2e.

1988 Hayes Loamy Fine Sand, 5 To 10 Percent Slopes

Hayes soil makes up 70 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a moderately sloping to strongly sloping dune on paleoterrace on river valley. The runoff class is low. The parent material consists of loamy eolian deposits over clayey alluvium. This soil is well drained. The slowest permeability is slow. It has a moderate available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Sandy (pe21-28) range site. This soil is in the irrigated land capability class 3e. It is in the nonirrigated land capability classification 3e.

2556 Langdon Fine Sand, 0 To 15 Percent Slopes

Langdon soil makes up 50 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level to moderately steep dune on paleoterrace on river valley. The runoff class is medium. The parent material consists of sandy eolian deposits. This soil is somewhat excessively drained. The slowest permeability is rapid. It has a low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Choppy Sands (pe21-28) range site. It is in the nonirrigated land capability classification 6e.

3512 Saltcreek And Naron Fine Sandy Loams, 1 To 3 Percent Slopes

Saltcreek soil makes up 50 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping dune on paleoterrace on river valley. The runoff class is low. The parent material consists of loamy eolian deposits over alluvium. This soil is well drained. The slowest permeability is slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Sandy (pe21-28) range site. This soil is in the irrigated land capability class 1 It is in the nonirrigated land capability classification 3e.

Naron soil makes up 50 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping dune on paleoterrace on river valley. The runoff class is low. The parent material consists of loamy eolian deposits. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Sandy (pe21-28) range site. This soil is in the irrigated land capability class 3e. It is in the nonirrigated land capability classification 3e.

3540 Solvay Loamy Fine Sand, 0 To 2 Percent Slopes

Solvay soil makes up 90 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level to gently sloping interdune on paleoterrace on river valley. The runoff class is very low. The parent material consists of loamy eolian deposits over alluvium. This soil is somewhat poorly drained. The slowest permeability is moderately slow. It has a high available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 36 inches. This soil is in the Subirrigated (pe21-28) range site. It is in the nonirrigated land capability classification 2e.

3640 Tivin Fine Sand, 10 To 30 Percent Slopes

Tivin soil makes up 95 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a strongly sloping to steep dune on paleoterrace on river valley. The runoff class is medium. The parent material consists of sandy eolian deposits. This soil is somewhat excessively drained. The slowest permeability is rapid. It has a low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Choppy Sands (pe21-28) range site. It is in the nonirrigated land capability classification 6e.

An Albion Sandy Loam, 1 To 4 Percent Slopes

Albion soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping paleoterrace on river valley. The runoff class is very low. The parent material consists of loamy alluvium. This soil is well drained. The slowest permeability is moderately rapid. It has a moderate available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Sandy (pe20-25) range site. It is in the nonirrigated land capability classification 3e.

As Albion-Shellabarger Sandy Loams, 4 To 15 Percent Slopes

Albion soil makes up 65 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep paleoterrace on river valley. The runoff class is medium. The parent material consists of loamy alluvium. This soil is well drained. The slowest permeability is moderately rapid. It has a moderate available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Sandy (pe20-25) range site. It is in the nonirrigated land capability classification 6e.

Shellabarger soil makes up 35 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep paleoterrace on river valley. The runoff class is medium. The parent material consists of loamy alluvium. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Sandy (pe20-25) range site. It is in the nonirrigated land capability classification 6e.

At Attica Loamy Fine Sand, 1 To 4 Percent Slopes

Attica soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping dune on paleoterrace on river valley. The runoff class is very low. The parent material consists of eolian deposits. This soil is well drained. The slowest permeability is moderately rapid. It has a moderate available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Sandy (pe21-28) range site. It is in the nonirrigated land capability classification 2e.

Ax Attica-Carwile Complex, 0 To 4 Percent Slopes

Attica soil makes up 60 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping dune field on paleoterrace. The runoff class is very low. The parent material consists of sandy eolian deposits. This soil is well drained. The slowest permeability is moderately rapid. It has a moderate available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Sandy (pe21-28) range site. It is in the nonirrigated land capability classification 2e.

Carwile soil makes up 40 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level depression. The runoff class is negligible. The parent material consists of alluvium. This soil is somewhat poorly drained. The slowest permeability is slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 0 inches. This soil is in the Sandy (pe21-28) range site. It is in the nonirrigated land capability classification 2w.

Ca Canadian Fine Sandy Loam, Rarely Flooded

Canadian soil makes up 100 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a nearly level to gently sloping flood plain on river valley. The runoff class is negligible. The parent material consists of loamy alluvium. This soil is well drained. The slowest permeability is moderately rapid. It has a moderate available water capacity and a low shrink swell potential. This soil is rarely flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Sandy Terrace (pe20-25) range site. It is in the nonirrigated land capability classification 2e.

Cc Carwile Fine Sandy Loam, 0 To 1 Percent Slopes

Carwile soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level depression. The runoff class is medium. The parent material consists of alluvium. This soil is somewhat poorly drained. The slowest permeability is slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 0 inches. This soil is in the Sandy (pe21-28) range site. It is in the nonirrigated land capability classification 2w.

Ce Case Clay Loam, 2 To 7 Percent Slopes

Case soil makes up 100 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping paleoterrace on river valley. The runoff class is medium. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 25 percent calcium carbonate. This soil is in the Limy Upland (pe20-25) range site. It is in the nonirrigated land capability classification 4e.

Cf Case Clay Loam, 7 To 15 Percent Slopes

Case soil makes up 100 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a strongly sloping to moderately steep paleoterrace on river valley. The runoff class is medium. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 25 percent calcium carbonate. This soil is in the Limy Upland (pe20-25) range site. It is in the nonirrigated land capability classification 6e.

Cg Case-Canlon Complex, 7 To 20 Percent Slopes

Case soil makes up 65 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a strongly sloping to moderately steep paleoterrace on river valley. The runoff class is medium. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 25 percent calcium carbonate. This soil is in the Limy Upland (pe20-25) range site. It is in the nonirrigated land capability classification 6e.

Canlon soil makes up 35 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a strongly sloping to moderately steep break on tableland. The runoff class is medium. The parent material consists of calcareous loamy residuum weathered from sandstone. The soil is 10 to 20 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is moderate. It has a very low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Limy (pe20-25) range site. It is in the nonirrigated land capability classification 6s.

Ck Clark Loam, 1 To 3 Percent Slopes

Clark soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping paleoterrace on river valley. The runoff class is low. The parent material consists of loamy alluvium. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 45 percent calcium carbonate. This soil is in the Limy Upland (pe20-25) range site. It is in the nonirrigated land capability classification 3e.

Cm Clark Loam, 3 To 7 Percent Slopes

Clark soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a moderately sloping paleoterrace on river valley. The runoff class is medium. The parent material consists of loamy alluvium. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 45 percent calcium carbonate. This soil is in the Limy Upland (pe20-25) range site. It is in the nonirrigated land capability classification 4e.

Co Coly Silt Loam, 4 To 9 Percent Slopes

Coly soil makes up 100 percent of the map unit. This map unit is in the Rolling Plains and Breaks Major Land Resource Area. This soil occurs on a moderately sloping to strongly sloping hillslope on tableland. The runoff class is medium. The parent material consists of calcareous loess. This soil is well drained. The slowest permeability is moderate. It has a very high available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Limy Upland (pe20-25) range site. This soil is in the irrigated land capability class 4e. It is in the nonirrigated land capability classification 4e.

Cp Coly Silt Loam, 20 To 40 Percent Slopes

Coly soil makes up 100 percent of the map unit. This map unit is in the Rolling Plains and Breaks Major Land Resource Area. This soil occurs on a steep to steep hillslope on tableland. The runoff class is high. The parent material consists of calcareous loess. This soil is well drained. The slowest permeability is moderate. It has a very high available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loess Breaks (pe20-20) range site. It is in the nonirrigated land capability classification 7e.

Ct Coly-Tobin Silt Loams, 0 To 20 Percent Slopes

Coly soil makes up 70 percent of the map unit. This map unit is in the Rolling Plains and Breaks Major Land Resource Area. This soil occurs on a strongly sloping to moderately steep hillslope on tableland. The runoff class is medium. The parent material consists of calcareous loess. This soil is well drained. The slowest permeability is moderate. It has a very high available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Limy Upland (pe20-25) range site. It is in the nonirrigated land capability classification 6e.

Tobin soil makes up 30 percent of the map unit. This map unit is in the Rolling Plains and Breaks Major Land Resource Area. This soil occurs on a nearly level to gently sloping flood plain on river valley. The runoff class is low. The parent material consists of silty alluvium. This soil is well drained. The slowest permeability is moderate. It has a very high available water capacity and a moderate shrink swell potential. This soil is frequently flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Lowland (pe20-25) range site. It is in the nonirrigated land capability classification 5w.

Da Dale Silt Loam, Rarely Flooded

Dale soil makes up 100 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a nearly level to gently sloping flood plain on river valley. The runoff class is negligible. The parent material consists of silty alluvium. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a moderate shrink swell potential. This soil is rarely flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Terrace (pe20-25) range site. It is in the nonirrigated land capability classification 2e.

Fa Farnum Loam, 0 To 1 Percent Slopes

Farnum soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level paleoterrace on river valley. The runoff class is negligible. The parent material consists of loamy alluvium. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe21-28) range site. This soil is in the irrigated land capability class 1 It is in the nonirrigated land capability classification 2c.

Fb Farnum Loam, 1 To 3 Percent Slopes

Farnum soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping paleoterrace on river valley. The runoff class is low. The parent material consists of loamy alluvium. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe21-28) range site. This soil is in the irrigated land capability class 2e. It is in the nonirrigated land capability classification 2e.

Ha Harney Silt Loam, 0 To 1 Percent Slopes

Harney soil makes up 100 percent of the map unit. This map unit is in the Rolling Plains and Breaks Major Land Resource Area. This soil occurs on a nearly level plain on tableland. The runoff class is low. The parent material consists of loess. This soil is well drained. The slowest permeability is moderately slow. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe20-25) range site. This soil is in the irrigated land capability class 1 It is in the nonirrigated land capability classification 2c.

Hb Harney Silt Loam, 1 To 3 Percent Slopes

Harney soil makes up 100 percent of the map unit. This map unit is in the Rolling Plains and Breaks Major Land Resource Area. This soil occurs on a gently sloping plain on tableland. The runoff class is medium. The parent material consists of loess. This soil is well drained. The slowest permeability is moderately slow. It has a high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe20-25) range site. This soil is in the irrigated land capability class 2e. It is in the nonirrigated land capability classification 2e.

NONTECHNICAL SOIL DESCRIPTIONS--Continued
Kiowa County, Kansas

He Hedville-Rock Outcrop Complex, 15 To 30 Percent Slopes

Hedville soil makes up 70 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a moderately steep to steep backslope hillslope on upland. The runoff class is high. The parent material consists of loamy residuum weathered from sandstone and shale. The soil is 4 to 20 inches deep to bedrock (lithic). This soil is somewhat excessively drained. The slowest permeability is moderate. It has a very low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Sandstone (pe20-25) range site. It is in the nonirrigated land capability classification 7s.

Ho Holdrege Silt Loam, 0 To 1 Percent Slopes

Holdrege soil makes up 100 percent of the map unit. This map unit is in the Rolling Plains and Breaks Major Land Resource Area. This soil occurs on a nearly level plain on tableland. The runoff class is negligible. The parent material consists of loess. This soil is well drained. The slowest permeability is moderate. It has a very high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe20-25) range site. This soil is in the irrigated land capability class 1 It is in the nonirrigated land capability classification 2c.

Hp Holdrege Silt Loam, 1 To 3 Percent Slopes

Holdrege soil makes up 100 percent of the map unit. This map unit is in the Rolling Plains and Breaks Major Land Resource Area. This soil occurs on a gently sloping plain on tableland. The runoff class is low. The parent material consists of loess. This soil is well drained. The slowest permeability is moderate. It has a very high available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe20-25) range site. This soil is in the irrigated land capability class 2e. It is in the nonirrigated land capability classification 2e.

Kr Krier Sandy Loam, Occasionally Flooded

Krier soil makes up 100 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a nearly level to gently sloping flood plain on river valley. The runoff class is negligible. The parent material consists of alluvium. This soil is somewhat poorly drained. The slowest permeability is moderately rapid. It has a low available water capacity and a low shrink swell potential. This soil is occasionally flooded and is not ponded. The top of the seasonal high water table is at 24 inches. This soil contains a moderately saline horizon, This soil is in the Saline Subirrigated (pe20-25) range site. It is in the nonirrigated land capability classification 6s.

Lh Lancaster-Hedville Complex, 4 To 20 Percent Slopes

Lancaster soil makes up 65 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a moderately sloping to strongly sloping hillslope on upland. The runoff class is medium. The parent material consists of loamy residuum weathered from sandstone and shale. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is moderate. It has a low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe20-25) range site. It is in the nonirrigated land capability classification 6e.

Hedville soil makes up 35 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep backslope hillslope on upland. The runoff class is medium. The parent material consists of loamy residuum weathered from sandstone and shale. The soil is 4 to 20 inches deep to bedrock (lithic). This soil is somewhat excessively drained. The slowest permeability is moderate. It has a very low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Sandstone (pe20-25) range site. It is in the nonirrigated land capability classification 7s.

Ln Lincoln Sandy Loam, Occasionally Flooded

Lincoln soil makes up 100 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a nearly level to gently sloping flood plain on river valley. The runoff class is negligible. The parent material consists of alluvium. This soil is somewhat excessively drained. The slowest permeability is rapid. It has a low available water capacity and a low shrink swell potential. This soil is occasionally flooded and is not ponded. The top of the seasonal high water table is at 66 inches. This soil is in the Sandy Lowland (pe20-25) range site. It is in the nonirrigated land capability classification 6w.

Na Naron Fine Sandy Loam, 0 To 1 Percent Slopes

Naron soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level paleoterrace on river valley. The runoff class is negligible. The parent material consists of loamy eolian deposits. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Sandy (pe21-28) range site. This soil is in the irrigated land capability class 1 It is in the nonirrigated land capability classification 2e.

NONTECHNICAL SOIL DESCRIPTIONS--Continued
Kiowa County, Kansas

Nb Naron Fine Sandy Loam, 1 To 3 Percent Slopes

Naron soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping paleoterrace on river valley. The runoff class is low. The parent material consists of loamy eolian deposits. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Sandy (pe21-28) range site. This soil is in the irrigated land capability class 2e. It is in the nonirrigated land capability classification 3e.

Ne Ness Silty Clay

Ness soil makes up 100 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a nearly level playa on tableland. The runoff class is high. The parent material consists of alluvium. This soil is poorly drained. The slowest permeability is very slow. It has a moderate available water capacity and a high shrink swell potential. This soil is not flooded and is frequent ponded. The top of the seasonal high water table is at 0 inches. This soil is in the Lakebed (pe20-25) range site. It is in the nonirrigated land capability classification 6w.

Nw New Cambria Silty Clay, Rarely Flooded

New Cambria soil makes up 100 percent of the map unit. This map unit is in the Rolling Plains and Breaks Major Land Resource Area. This soil occurs on a nearly level to gently sloping stream terrace on river valley. The runoff class is medium. The parent material consists of calcareous clayey alluvium. This soil is moderately well drained. The slowest permeability is impermeable. It has a moderate available water capacity and a high shrink swell potential. This soil is rarely flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Clay Terrace (pe20-25) range site. This soil is in the irrigated land capability class 2s. It is in the nonirrigated land capability classification 2s.

Oe Wellsford Clay, 6 To 25 Percent Slopes

Owens soil makes up 100 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a moderately sloping to steep hillslope on upland. The runoff class is very high. The parent material consists of residuum weathered from clayey shale. The soil is 10 to 20 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is very slow. It has a very low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Blue Shale (pe20-25) range site. It is in the nonirrigated land capability classification 6e.

Pe Plevna Loam, Frequently Flooded

Plevna soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is negligible. The parent material consists of alluvium. This soil is poorly drained. The slowest permeability is moderate. It has a moderate available water capacity and a low shrink swell potential. This soil is frequently flooded and is not ponded. The top of the seasonal high water table is at 12 inches. This soil is in the Subirrigated (pe20-25) range site. It is in the nonirrigated land capability classification 5w.

Pr Pratt Loamy Fine Sand, 1 To 5 Percent Slopes

Pratt soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping dune on paleoterrace on river valley. The runoff class is very low. The parent material consists of sandy eolian deposits. This soil is well drained. The slowest permeability is rapid. It has a moderate available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Sands (pe21-28) range site. This soil is in the irrigated land capability class 3e. It is in the nonirrigated land capability classification 3e.

Ps Pratt Loamy Fine Sand, 5 To 10 Percent Slopes

Pratt soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a moderately sloping to strongly sloping dune on paleoterrace on river valley. The runoff class is very low. The parent material consists of sandy eolian deposits. This soil is well drained. The slowest permeability is rapid. It has a moderate available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Sands (pe21-28) range site. This soil is in the irrigated land capability class 3e. It is in the nonirrigated land capability classification 4e.

Pt Pratt-Tivoli Loamy Fine Sands, 5 To 15 Percent Slopes

Pratt soil makes up 60 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep dune on paleoterrace on river valley. The runoff class is low. The parent material consists of sandy eolian deposits. This soil is well drained. The slowest permeability is rapid. It has a moderate available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Sands (pe21-28) range site. It is in the nonirrigated land capability classification 6e.

Tivoli soil makes up 40 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep dune on paleoterrace on river valley. The runoff class is low. The parent material consists of sandy eolian deposits. This soil is excessively drained. The slowest permeability is rapid. It has a low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Sands (pe21-28) range site. It is in the nonirrigated land capability classification 7e.

Qw Quinlan-Woodward Loams, 6 To 25 Percent Slopes

Quinlan soil makes up 55 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a moderately sloping to steep upland. The runoff class is medium. The parent material consists of loamy residuum weathered from calcareous sandstone. The soil is 10 to 20 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is moderate. It has a very low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Prairie (pe20-25) range site. It is in the nonirrigated land capability classification 6e.

Woodward soil makes up 45 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep upland. The runoff class is medium. The parent material consists of coarse-silty residuum weathered from calcareous sandstone. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is moderate. It has a low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe20-25) range site. It is in the nonirrigated land capability classification 6e.

Sh Shellabarger Loam, 2 To 6 Percent Slopes

Shellabarger soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping paleoterrace on tableland. The runoff class is low. The parent material consists of loamy alluvium. This soil is well drained. The slowest permeability is moderate. It has a high available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Sandy (pe20-25) range site. It is in the nonirrigated land capability classification 3e.

Th Tivoli Fine Sand, 15 To 30 Percent Slopes

Tivoli soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a strongly sloping to steep dune on paleoterrace on river valley. The runoff class is medium. The parent material consists of sandy eolian deposits. This soil is excessively drained. The slowest permeability is rapid. It has a very low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Choppy Sands (pe21-28) range site. It is in the nonirrigated land capability classification 7e.

To Tobin Silt Loam, Channeled

Tobin soil makes up 100 percent of the map unit. This map unit is in the Rolling Plains and Breaks Major Land Resource Area. This soil occurs on a nearly level to gently sloping flood plain on river valley. The runoff class is negligible. The parent material consists of silty alluvium. This soil is well drained. The slowest permeability is moderate. It has a very high available water capacity and a moderate shrink swell potential. This soil is frequently flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Lowland (pe20-25) range site. It is in the nonirrigated land capability classification 5w.

Ts Tobin Silt Loam, Occasionally Flooded

Tobin soil makes up 100 percent of the map unit. This map unit is in the Rolling Plains and Breaks Major Land Resource Area. This soil occurs on a nearly level to gently sloping flood plain on river valley. The runoff class is negligible. The parent material consists of silty alluvium. This soil is well drained. The slowest permeability is moderate. It has a very high available water capacity and a moderate shrink swell potential. This soil is occasionally flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Lowland (pe20-25) range site. It is in the nonirrigated land capability classification 2w.

Uc Uly Silt Loam, 3 To 7 Percent Slopes

Uly soil makes up 100 percent of the map unit. This map unit is in the Rolling Plains and Breaks Major Land Resource Area. This soil occurs on a moderately sloping hillslope on tableland. The runoff class is medium. The parent material consists of loess. This soil is well drained. The slowest permeability is moderate. It has a very high available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe20-25) range site. This soil is in the irrigated land capability class 3e. It is in the nonirrigated land capability classification 3e.

Wa Waldeck Loam, Occasionally Flooded

Waldeck soil makes up 100 percent of the map unit. This map unit is in the Central Rolling Red Plains Major Land Resource Area. This soil occurs on a nearly level to gently sloping flood plain, river valley. The runoff class is very low. The parent material consists of coarse-loamy alluvium. This soil is somewhat poorly drained. The slowest permeability is moderately rapid. It has a moderate available water capacity and a low shrink swell potential. This soil is occasionally flooded and is not ponded. The top of the seasonal high water table is at 36 inches. This soil is in the Subirrigated (pe20-25) range site. It is in the nonirrigated land capability classification 3w.

007CF—Clairemont Soils, channeled

Map Unit Composition

Clairemont: 100 percent

Component Descriptions

Clairemont
MLRA: 78 - Central Rolling Red Plains
Landform: Flood plain on river valley
Parent material: Calcareous silty alluvium
Slope: 0 to 2 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 11.2 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: Frequent
Depth to seasonal water saturation: More than 6 feet
Runoff class: Negligible
Ecological site: Loamy Lowland (pe20-25)
Land capability (nonirrigated): 5w

Typical Profile:
H1—0 to 14 inches; silt loam
H2—14 to 60 inches; silty clay loam

025AB—Albion-Shellabarger sandy loams, 6 to 12 percent slopes

Map Unit Composition

Albion: 60 percent
Shellabarger: 40 percent

Component Descriptions

Albion
MLRA: 78 - Central Rolling Red Plains
Landform: Paleoterrace on tableland
Parent material: Alluvium
Slope: 6 to 12 percent
Drainage class: Well drained
Slowest permeability: Moderately rapid (About 2.00 in/hr)
Available water capacity: Low (About 5.5 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Sandy (pe20-25)
Land capability (nonirrigated): 6e

Typical Profile:
H1—0 to 8 inches; sandy loam
H2—8 to 15 inches; sandy loam
H3—15 to 22 inches; coarse sandy loam
H4—22 to 60 inches; gravelly sand

Shellabarger
MLRA: 78 - Central Rolling Red Plains
Landform: Paleoterrace on tableland
Parent material: Alluvium
Slope: 6 to 12 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 9.7 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Sandy (pe20-25)
Land capability (nonirrigated): 6e

Typical Profile:
H1—0 to 10 inches; sandy loam
H2—10 to 60 inches; sandy clay loam
H3—60 to 64 inches; coarse sandy loam

025PG—Penden clay loam, 7 to 15 percent slopes

Map Unit Composition

Penden: 100 percent

Component Descriptions

Penden
MLRA: 78 - Central Rolling Red Plains

Landform: Break on tableland
Parent material: Residuum
Slope: 7 to 15 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 10.3 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Limy Upland (pe20-25)
Land capability (nonirrigated): 6e

Typical Profile:
H1—0 to 16 inches; clay loam
H2—16 to 28 inches; clay loam
H3—28 to 60 inches; clay loam

025SH—Shellabarger loam, 2 to 5 percent slopes

Map Unit Composition

Shellabarger: 100 percent

Component Descriptions

Shellabarger
MLRA: 78 - Central Rolling Red Plains
Landform: Paleoterrace on tableland
Parent material: Alluvium
Slope: 2 to 5 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Moderate (About 8.3 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Sandy (pe20-25)
Land capability (nonirrigated): 3e

Typical Profile:
H1—0 to 11 inches; loam
H2—11 to 29 inches; sandy clay loam
H3—29 to 60 inches; coarse sandy loam

033AC—Abilene silt loam, 1 to 3 percent slopes

Map Unit Composition

Abilene: 100 percent

Component Descriptions

Abilene
MLRA: 78 - Central Rolling Red Plains
Landform: Paleoterrace on tableland
Parent material: Calcareous old alluvium
Slope: 1 to 3 percent
Drainage class: Well drained
Slowest permeability: Moderately slow (About 0.20 in/hr)
Available water capacity: High (About 9.1 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Loamy Upland (pe20-25)
Land capability (irrigated): 2e
Land capability (nonirrigated): 2e

Typical Profile:
H1—0 to 8 inches; silt loam
H2—8 to 35 inches; clay
H3—35 to 60 inches; clay loam

033CK—Case clay loam, 3 to 7 percent slopes

Map Unit Composition

Case: 100 percent

Component Descriptions

Case
MLRA: 78 - Central Rolling Red Plains
Landform: Paleoterrace on tableland
Parent material: Alluvium
Slope: 3 to 7 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 10.3 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Limy Upland (pe20-25)
Land capability (nonirrigated): 4e

Typical Profile:
H1—0 to 8 inches; clay loam
H2—8 to 60 inches; clay loam

033CS—Clark clay loam, 1 to 3 percent slopes

Map Unit Composition

Clark: 100 percent

Component Descriptions

Clark
MLRA: 78 - Central Rolling Red Plains
Landform: Paleoterrace on river valley
Parent material: Alluvium
Slope: 1 to 3 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 10.3 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Limy Upland (pe20-25)
Land capability (nonirrigated): 3e

Typical Profile:
H1—0 to 10 inches; clay loam
H2—10 to 60 inches; clay loam

033CT—Clark clay loam, 3 to 6 percent slopes

Map Unit Composition

Clark: 100 percent

Component Descriptions

Clark
MLRA: 78 - Central Rolling Red Plains
Landform: Paleoterrace on river valley
Parent material: Alluvium
Slope: 3 to 6 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 10.3 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Limy Upland (pe20-25)
Land capability (nonirrigated): 4e

Typical Profile:
H1—0 to 10 inches; clay loam
H2—10 to 60 inches; clay loam

033ED—Elandco silt loam, occasionally flooded

Map Unit Composition

Elandco: 100 percent

Component Descriptions

Elandco
MLRA: 78 - Central Rolling Red Plains
Landform: Flood plain on river valley
Parent material: Loamy alluvium
Slope: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 11.2 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: Occasional
Depth to seasonal water saturation: More than 6 feet
Runoff class: Negligible
Ecological site: Loamy Lowland (pe20-25)
Land capability (nonirrigated): 2w

Typical Profile:
H1—0 to 31 inches; silt loam
H2—31 to 60 inches; silt loam

033EF—Elandco silt loam, channeled

Map Unit Composition

Elandco: 100 percent

Component Descriptions

Elandco
MLRA: 78 - Central Rolling Red Plains
Landform: Flood plain on river valley
Parent material: Loamy alluvium
Slope: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 11.2 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: Frequent
Depth to seasonal water saturation: More than 6 feet
Runoff class: Negligible
Ecological site: Loamy Lowland (pe20-25)
Land capability (nonirrigated): 6w

Typical Profile:
H1—0 to 31 inches; silt loam
H2—31 to 60 inches; silt loam

033KC—Kanza loamy fine sand, frequently flooded

Map Unit Composition

Kanza: 100 percent

Component Descriptions

Kanza
MLRA: 78 - Central Rolling Red Plains
Landform: Flood plain on river valley
Parent material: Loamy alluvium
Slope: 0 to 1 percent
Drainage class: Poorly drained
Slowest permeability: Rapid (About 5.95 in/hr)
Available water capacity: Low (About 5.5 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: Frequent
Depth to seasonal water saturation: About 0 to 36 inches
Runoff class: Negligible
Land capability (nonirrigated): 5w

Typical Profile:
H1—0 to 10 inches; loamy fine sand
H2—10 to 60 inches; sand

033LN—Lincoln loamy sand, occasionally flooded

Map Unit Composition

Lincoln: 100 percent

Component Descriptions

Lincoln
MLRA: 78 - Central Rolling Red Plains
Landform: Flood plain on river valley
Parent material: Sandy alluvium
Slope: 0 to 1 percent
Drainage class: Somewhat excessively drained

Slowest permeability: Rapid (About 5.95 in/hr)
Available water capacity: Low (About 3.3 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: Occasional
Depth to seasonal water saturation: About 60 to 72 inches
Runoff class: Negligible
Ecological site: Sandy Lowland (pe20-25)
Land capability (nonirrigated): 6w

Typical Profile:
H1—0 to 10 inches; loamy sand
H2—10 to 60 inches; stratified fine sand to clay loam

Minor Components
Kanza

033QR—Quinlan - Woodward loams, 6 to 15 percent slopes

Map Unit Composition

Quinlan: 55 percent
Woodward: 45 percent

Component Descriptions

Quinlan
MLRA: 78 - Central Rolling Red Plains
Landform: Hillslope on upland
Parent material: Residuum
Slope: 6 to 15 percent
Depth to restrictive feature: 10 to 20 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very low (About 2.7 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Shallow Prairie (pe20-25)
Land capability (nonirrigated): 6e

Typical Profile:
H1—0 to 14 inches; loam
Cr—14 to 14 inches; weathered bedrock

Woodward
MLRA: 78 - Central Rolling Red Plains
Landform: Hillslope on upland
Parent material: Residuum
Slope: 6 to 15 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Low (About 5.1 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Loamy Upland (pe20-25)
Land capability (nonirrigated): 6e

Typical Profile:
H1—0 to 30 inches; loam
Cr—30 to 30 inches; weathered bedrock

033SH—Shellabarger sandy loam, 1 to 3 percent slopes

Map Unit Composition

Shellabarger: 100 percent

Component Descriptions

Shellabarger
MLRA: 78 - Central Rolling Red Plains
Landform: Paleoterrace on river valley
Parent material: Alluvium
Slope: 1 to 3 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Moderate (About 8.8 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Sandy (pe20-25)
Land capability (nonirrigated): 2e

Typical Profile:
H1—0 to 11 inches; sandy loam
H2—11 to 38 inches; sandy clay loam
H3—38 to 60 inches; coarse sandy loam

033SM—Shellabarger sandy loam, 3 to 6 percent slopes

Map Unit Composition

Shellabarger: 100 percent

Component Descriptions

Shellabarger
MLRA: 78 - Central Rolling Red Plains
Landform: Paleoterrace on river valley
Parent material: Alluvium
Slope: 3 to 6 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Moderate (About 8.8 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Sandy (pe20-25)
Land capability (nonirrigated): 3e

Typical Profile:
H1—0 to 11 inches; sandy loam
H2—11 to 38 inches; sandy clay loam
H3—38 to 60 inches; coarse sandy loam

047PA—Platte Soils, occasionally flooded

Map Unit Composition

Platte: 100 percent

Component Descriptions

Platte
MLRA: 79 - Great Bend Sand Plains
Landform: Flood plain on river valley
Parent material: Loamy alluvium
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Low (About 3.5 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: Occasional
Depth to seasonal water saturation: About 12 to 24 inches
Runoff class: Very low
Ecological site: Subirrigated (pe21-28)
Land capability (irrigated): 4w
Land capability (nonirrigated): 4w

Typical Profile:
H1—0 to 9 inches; loam
H2—9 to 60 inches; coarse sand

047WA—Waldeck fine sandy loam, occasionally flooded

Map Unit Composition

Waldeck: 100 percent

Component Descriptions

Waldeck
MLRA: 79 - Great Bend Sand Plains
Landform: Flood plain on river valley
Parent material: Loamy alluvium
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Moderately rapid (About 2.00 in/hr)
Available water capacity: Moderate (About 6.2 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: Occasional
Depth to seasonal water saturation: About 24 to 48 inches
Runoff class: Negligible
Ecological site: Subirrigated (pe21-28)
Land capability (nonirrigated): 3w

Typical Profile:
H1—0 to 10 inches; fine sandy loam
H2—10 to 28 inches; sandy loam
H3—28 to 60 inches; sand

Minor Components
Unnamed Hydric Soil

Unnamed Wet Soils
Phase: Sandy, Depression

Unnamed Wet Soils
Phase: Sandy, Drainageway

057HD—Holdrege fine sandy loam, 1 to 3 percent slopes

Map Unit Composition

Holdrege: 100 percent

Component Descriptions

Holdrege
MLRA: 73 - Rolling Plains and Breaks
Landform: Plain on tableland
Parent material: Calcareous loess
Slope: 1 to 3 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 11.8 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Loamy Upland (pe20-26)
Land capability (irrigated): 2e
Land capability (nonirrigated): 2e

Typical Profile:
H1—0 to 11 inches; very fine sandy loam
H2—11 to 33 inches; silty clay loam
H3—33 to 48 inches; silty clay loam
H4—48 to 66 inches; silt loam

057PR—Pratt loamy fine sand, 3 to 10 percent slopes

Map Unit Composition

Pratt: 100 percent

Component Descriptions

Pratt
MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Sandy eolian deposits
Slope: 3 to 10 percent
Drainage class: Well drained
Slowest permeability: Rapid (About 6.00 in/hr)
Available water capacity: Low (About 5.5 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very low
Ecological site: Sands (pe20-26)
Land capability (irrigated): 3e
Land capability (nonirrigated): 4e

Typical Profile:
H1—0 to 9 inches; loamy fine sand
H2—9 to 28 inches; loamy fine sand
H3—28 to 54 inches; loamy fine sand

Minor Components
Unnamed Hydric Soils

057PT—Pratt-Tivoli loamy fine sands, 4 to 15 percent slopes

Map Unit Composition

Pratt: 60 percent
Tivoli: 40 percent

Component Descriptions

Pratt
MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Sandy eolian deposits
Slope: 4 to 15 percent

Drainage class: Well drained
Slowest permeability: Rapid (About 5.95 in/hr)
Available water capacity: Low (About 5.5 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very low
Ecological site: Sands (pe20-26)
Land capability (irrigated): 3e
Land capability (nonirrigated): 4e

Typical Profile:
H1—0 to 9 inches; loamy fine sand
H2—9 to 28 inches; loamy fine sand
H3—28 to 54 inches; loamy fine sand

Tivoli
MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Sandy eolian deposits
Slope: 5 to 15 percent
Drainage class: Excessively drained
Slowest permeability: Rapid (About 5.95 in/hr)
Available water capacity: Low (About 4.4 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very low
Ecological site: Sands (pe20-26)
Land capability (nonirrigated): 6e

Typical Profile:
H1—0 to 6 inches; loamy fine sand
H2—6 to 60 inches; fine sand

Minor Components
Unnamed Hydric Soils

057TV—Tivoli fine sand, 5 to 20 percent slopes

Map Unit Composition

Tivoli: 100 percent

Component Descriptions

Tivoli
MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Sandy eolian deposits
Slope: 5 to 20 percent
Drainage class: Excessively drained
Slowest permeability: Rapid (About 6.00 in/hr)
Available water capacity: Low (About 4.2 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very low
Ecological site: Choppy Sands (pe20-26)
Land capability (nonirrigated): 7e

Typical Profile:
H1—0 to 6 inches; fine sand
H2—6 to 60 inches; fine sand

151BC—Blanket silty clay loam, 1 to 4 percent slopes, eroded

Map Unit Composition

Blanket: 100 percent

Component Descriptions

Blanket
MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Clayey alluvium
Slope: 1 to 4 percent
Drainage class: Well drained
Slowest permeability: Moderately slow (About 0.20 in/hr)
Available water capacity: High (About 9.2 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Loamy Upland (pe21-28)
Land capability (nonirrigated): 3e

Typical Profile:
H1—0 to 13 inches; silty clay loam
H2—13 to 46 inches; silty clay
H3—46 to 60 inches; silty clay loam

151BH—Blanket silt loam, 1 to 3 percent slopes

Map Unit Composition

Blanket: 100 percent

Component Descriptions

Blanket
MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Clayey alluvium
Slope: 1 to 3 percent
Drainage class: Well drained
Slowest permeability: Moderately slow (About 0.20 in/hr)
Available water capacity: High (About 9.2 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Loamy Upland (pe21-28)
Land capability (nonirrigated): 2e

Typical Profile:
H1—0 to 13 inches; silt loam
H2—13 to 46 inches; silty clay
H3—46 to 60 inches; silty clay loam

151FE—Farnum fine sandy loam, 0 to 1 percent slopes

Map Unit Composition

Farnum: 100 percent

Component Descriptions

Farnum
MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Alluvium
Slope: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 9.6 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very low
Ecological site: Sandy (pe21-28)
Land capability (irrigated): 1
Land capability (nonirrigated): 2e

Typical Profile:
H1—0 to 11 inches; fine sandy loam
H2—11 to 41 inches; clay loam
H3—41 to 60 inches; fine sandy loam

Minor Components
Carwile

Unnamed Wet Soils
Phase: Loamy, Depression

151NM—Naron loam, 1 to 3 percent slopes

Map Unit Composition

Naron: 100 percent

Component Descriptions

Naron
MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Loamy eolian deposits
Slope: 1 to 3 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 9.4 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very low
Ecological site: Sandy (pe21-28)

Land capability (irrigated): 2e
Land capability (nonirrigated): 2e

Typical Profile:
H1—0 to 11 inches; loam
H2—11 to 38 inches; fine sandy loam
H3—38 to 60 inches; fine sandy loam

Minor Components
Carwile

Unnamed Wet Soils
Phase: Loamy, Depression

Unnamed Wet Soils
Phase: Loamy, Drainageway

151SE—Shellabarger fine sandy loam, 1 to 4 percent slopes

Map Unit Composition

Shellabarger: 100 percent

Component Descriptions

Shellabarger
MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Loamy alluvium
Slope: 1 to 4 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Moderate (About 8.5 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very low
Ecological site: Sandy (pe21-28)
Land capability (nonirrigated): 2e

Typical Profile:
H1—0 to 11 inches; fine sandy loam
H2—11 to 34 inches; sandy clay loam
H3—34 to 60 inches; coarse sandy loam

Minor Components
Unnamed Wet Soils
Phase: Sandy, Drainageway

1324—Carway And Carbika Soils, 0 to 1 percent slopes

Map Unit Composition

Carway: 50 percent
Carbika: 30 percent
Minor components: 20 percent

Component Descriptions

Carway
MLRA: 79 - Great Bend Sand Plains
Landform: Interdune on depression on paleoterrace on river valley
Parent material: Loamy eolian deposits over alluvium
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: High (About 9.0 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Ponding hazard: Frequent
Depth to seasonal water saturation: About 0 to 0 inches
Runoff class: Very low
Ecological site: Subirrigated (pe21-28)
Land capability (nonirrigated): 2w

Typical Profile:
Ap—0 to 7 inches; fine sandy loam
Bt1—7 to 10 inches; sandy clay loam
Bt2—10 to 15 inches; sandy clay loam
Bt3—15 to 22 inches; fine sandy loam
Bt4—22 to 35 inches; fine sandy loam
2Btb1—35 to 40 inches; clay loam
2Btb2—40 to 54 inches; clay loam
2Btb3—54 to 63 inches; clay loam
2Btb4—63 to 72 inches; clay loam
2Btkb—72 to 80 inches; clay loam

Carbika
MLRA: 79 - Great Bend Sand Plains
Landform: Interdune on depression on paleoterrace on river valley
Parent material: Loamy eolian deposits over alluvium
Slope: 0 to 1 percent
Drainage class: Poorly drained

Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: High (About 9.6 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Ponding hazard: Frequent
Depth to seasonal water saturation: About 0 to 0 inches
Runoff class: Very low
Ecological site: Subirrigated (pe21-28)
Land capability (nonirrigated): 2w

Typical Profile:
A—0 to 11 inches; silt loam
Bt1—11 to 15 inches; clay
Bt2—15 to 22 inches; clay loam
Bt3—22 to 34 inches; clay loam
Bt4—34 to 41 inches; clay loam
Bt5—41 to 60 inches; clay loam
Btk—60 to 80 inches; clay loam

Minor Components
Solvay
Composition: About 20 percent
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Ecological site: Subirrigated (pe21-28)

General Considerations: Most areas are in cropland but, some are in pasture or range. This mapunit is poorly suited for the most commonly grown crops. Wheat and grain sorghum are the predominant crops. The hazard for wind and water erosion is slight. The presence of water tables and potential for high shrink-swell limit most engineering uses for this mapunit.

1725—Farnum And Funmar loams, 0 to 1 percent slopes

Map Unit Composition

Funmar: 40 percent
Farnum: 40 percent
Minor components: 20 percent

Component Descriptions

Funmar
MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Loamy alluvium over alluvium
Slope: 0 to 1 percent
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 10.3 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very low
Ecological site: Loamy Upland (pe21-28)
Land capability (irrigated): 1
Land capability (nonirrigated): 2c

Typical Profile:
Ap—0 to 6 inches; loam
A—6 to 12 inches; loam
Bt1—12 to 17 inches; loam
Bt2—17 to 26 inches; clay loam
Bt3—26 to 32 inches; loam
2Ab—32 to 38 inches; silty clay loam
2Btb—38 to 54 inches; silty clay loam
2Btkb1—54 to 66 inches; silty clay loam
2Btkb2—66 to 80 inches; silty clay loam

Farnum
MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Alluvium
Slope: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 10.7 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very low
Ecological site: Loamy Upland (pe21-28)
Land capability (irrigated): 1
Land capability (nonirrigated): 2c

Typical Profile:
Ap—0 to 5 inches; loam
A—5 to 15 inches; loam
Bt1—15 to 21 inches; loam
Bt2—21 to 34 inches; sandy clay loam
Bt3—34 to 48 inches; loam
Bt4—48 to 61 inches; clay loam
Bt5—61 to 73 inches; clay loam
Btk—73 to 80 inches; loam

Minor Components
Naron
Composition: About 20 percent
Slope: 0 to 1 percent
Drainage class: Well drained
Ecological site: Sandy (pe21-28)

Carway
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Ecological site: Subirrigated (pe21-28)

Carbika
Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Subirrigated (pe21-28)

General Considerations: Most areas are in cropland, but some areas are in pasture or range. This mapunit is well suited for the most commonly grown crops. Wheat, grain sorghum, soybeans, and irrigated corn are the predominant crops grown. The hazard for wind and water erosion is slight. The potential for high shrink-swell may limit some of the engineering practices of this mapunit.

1726—Funmar And Farnum loams, 1 to 3 percent slopes

Map Unit Composition

Farnum: 40 percent
Funmar: 40 percent
Minor components: 20 percent

Component Descriptions

Farnum
MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Alluvium
Slope: 1 to 3 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 10.7 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Loamy Upland (pe21-28)
Land capability (irrigated): 1
Land capability (nonirrigated): 2c

Typical Profile:
Ap—0 to 5 inches; loam
A—5 to 15 inches; loam
Bt1—15 to 21 inches; loam
Bt2—21 to 34 inches; sandy clay loam
Bt3—34 to 48 inches; loam
Bt4—48 to 61 inches; clay loam
Bt5—61 to 73 inches; clay loam
Btk—73 to 80 inches; loam

Funmar
MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Loamy alluvium over alluvium
Slope: 1 to 3 percent
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 10.3 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Loamy Upland (pe21-28)
Land capability (irrigated): 1
Land capability (nonirrigated): 2c

Typical Profile:
Ap—0 to 6 inches; loam
A—6 to 12 inches; loam
Bt1—12 to 17 inches; loam
Bt2—17 to 26 inches; clay loam
Bt3—26 to 32 inches; loam
2Ab—32 to 38 inches; silty clay loam
2Btb—38 to 54 inches; silty clay loam
2Btkb1—54 to 66 inches; silty clay loam
2Btkb2—66 to 80 inches; silty clay loam

Minor Components
Naron
Composition: About 20 percent
Slope: 1 to 3 percent
Drainage class: Well drained
Ecological site: Sandy (pe21-28)

Carbika
Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Subirrigated (pe21-28)

Carway
Slope: 0 to 1 percent

Drainage class: Somewhat poorly drained
Ecological site: Subirrigated (pe21-28)

General Considerations: Most areas are in cropland, but some areas are in pasture or range. This mapunit is well suited for the most commonly grown crops. Wheat, grain sorghum, soybeans, and irrigated corn are the predominant crops grown. The hazard for wind and water erosion is slight. The potential for high shrink-swell may limit some of the engineering practices of this mapunit.

1985—Hayes fine sandy loam, 1 to 5 percent slopes

Map Unit Composition

Hayes: 60 percent
Minor components: 40 percent

Component Descriptions

Hayes
MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Loamy eolian deposits over clayey alluvium
Slope: 1 to 5 percent
Drainage class: Well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Moderate (About 8.1 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Sandy (pe21-28)
Land capability (irrigated): 3e
Land capability (nonirrigated): 3e

Typical Profile:
Ap—0 to 8 inches; fine sandy loam
Bt1—8 to 14 inches; fine sandy loam
Bt2—14 to 23 inches; fine sandy loam
Bt3—23 to 34 inches; fine sandy loam
Bt4—34 to 42 inches; fine sandy loam
Ab—42 to 47 inches; fine sandy loam
2Btb1—47 to 56 inches; sandy clay loam
2Btb2—56 to 69 inches; silty clay
2Btb3—69 to 80 inches; clay loam

Minor Components
Attica
Composition: About 25 percent
Slope: 1 to 5 percent
Drainage class: Well drained
Ecological site: Sandy (pe21-28)

Saltcreek
Composition: About 15 percent
Slope: 1 to 5 percent
Drainage class: Well drained
Ecological site: Sandy (pe21-28)

General Considerations: Most areas are used for cropland, but some areas are in pasture or range. This mapunit is moderately well suited for most commonly grown crops. Wheat, grain sorghum, and irigated corn are the predominant crops. The hazard for wind erosion is moderate and and water erosion is slight. The high shrink-swell potetial may limit some of the engineering uses of the soil.

1986—Hayes-Solvay loamy fine sands, 0 to 5 percent slopes

Map Unit Composition

Hayes: 55 percent
Solvay: 20 percent
Minor components: 25 percent

Component Descriptions

Hayes
MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Loamy eolian deposits over clayey alluvium
Slope: 0 to 5 percent
Drainage class: Well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Moderate (About 7.8 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Sandy (pe21-28)
Land capability (irrigated): 3e
Land capability (nonirrigated): 3e

Typical Profile:
Ap—0 to 8 inches; loamy fine sand
Bt1—8 to 14 inches; fine sandy loam
Bt2—14 to 23 inches; fine sandy loam
Bt3—23 to 34 inches; fine sandy loam
Bt4—34 to 42 inches; fine sandy loam
Ab—42 to 47 inches; fine sandy loam
2Btb1—47 to 56 inches; sandy clay loam
2Btb2—56 to 69 inches; silty clay
2Btb3—69 to 80 inches; clay loam

Solvay
MLRA: 79 - Great Bend Sand Plains
Landform: Interdune on paleoterrace on river valley
Parent material: Loamy eolian deposits over alluvium
Slope: 0 to 2 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Moderately slow (About 0.20 in/hr)
Available water capacity: Moderate (About 9.0 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 24 to 48 inches
Runoff class: Very low
Ecological site: Subirrigated (pe21-28)
Land capability (nonirrigated): 2e

Typical Profile:
A—0 to 5 inches; loamy fine sand
2Bt1—5 to 14 inches; fine sandy loam
2Bt2—14 to 23 inches; fine sandy loam
2Bt3—23 to 37 inches; fine sandy loam
2BC1—37 to 58 inches; fine sandy loam
2BC2—58 to 76 inches; loamy fine sand
2BC3—76 to 80 inches; loamy fine sand

Minor Components
Carway
Composition: About 15 percent
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Ecological site: Subirrigated (pe21-28)

Farnum
Composition: About 10 percent
Slope: 0 to 1 percent
Drainage class: Well drained
Ecological site: Loamy Upland (pe21-28)

General Considerations: Most areas are used for cropland, but some areas are in pasture or range. This mapunit is somewhat poorly suited for most commonly grown crops. Wheat and grain sorghum are the predominant crops grown. The hazard for wind erosion is severe and water erosion is slight. Wind erosion can be controlled by plant residue management, conservation tillage, and tall grass barriers. The high water tables, high shrink-swell potential, and sandy textures will limit most engineering uses of this mapunit.

1988—Hayes loamy fine sand, 5 to 10 percent slopes

Map Unit Composition

Hayes: 70 percent
Minor components: 30 percent

Component Descriptions

Hayes
MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Loamy eolian deposits over clayey alluvium
Slope: 5 to 10 percent
Drainage class: Well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Moderate (About 8.1 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Sandy (pe21-28)
Land capability (irrigated): 3e
Land capability (nonirrigated): 3e

Typical Profile:
Ap—0 to 8 inches; fine sandy loam
Bt1—8 to 14 inches; fine sandy loam
Bt2—14 to 23 inches; fine sandy loam
Bt3—23 to 34 inches; fine sandy loam
Bt4—34 to 42 inches; fine sandy loam
Ab—42 to 47 inches; fine sandy loam
2Btb1—47 to 56 inches; sandy clay loam
2Btb2—56 to 69 inches; silty clay
2Btb3—69 to 80 inches; clay loam

Minor Components
Pratt
Composition: About 30 percent
Slope: 5 to 10 percent
Drainage class: Well drained

Ecological site: Sands (pe21-28)

General Considerations: Most areas are used for pasture or range. The hazard for wind erosion is and and water erosion is moderate. The high shrink-swell potential and slope may limit some of the engineering uses of the soil.

2556—Langdon fine sand, 0 to 15 percent slopes

Map Unit Composition

Langdon: 50 percent
Minor components: 50 percent

Component Descriptions

Langdon
MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Sandy eolian deposits
Slope: 0 to 15 percent
Drainage class: Somewhat excessively drained
Slowest permeability: Rapid (About 6.00 in/hr)
Available water capacity: Low (About 3.2 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Ponding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Choppy Sands (pe21-28)
Land capability (nonirrigated): 6e

Typical Profile:
A—0 to 8 inches; fine sand
E&Bt—8 to 47 inches; stratified sand to loamy sand
C—47 to 64 inches; fine sand
E&Btb—64 to 80 inches; stratified sand to loamy sand

Minor Components
Turon
Composition: About 25 percent
Slope: 0 to 10 percent
Drainage class: Well drained
Ecological site: Sands (pe21-28)

Tivin
Composition: About 25 percent
Slope: 1 to 15 percent
Drainage class: Somewhat excessively drained
Ecological site: Choppy Sands (pe21-28)

Carway
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Ecological site: Subirrigated (pe21-28)

Warnut
Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Subirrigated (pe21-28)

General Considerations: Most areas are in pasture or range. This mapunit is poorly suited for the most commonly grown crops. The hazard for wind erosion is severe and water erosion is moderate. The sandy textures limit most engineering practices.

3512—Saltcreek And Naron fine sandy loams, 1 to 3 percent slopes

Map Unit Composition

Saltcreek: 50 percent
Naron: 50 percent
Minor components: 10 percent

Component Descriptions

Saltcreek
MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Loamy eolian deposits over alluvium
Slope: 1 to 3 percent
Drainage class: Well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 9.0 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Sandy (pe21-28)
Land capability (irrigated): 1
Land capability (nonirrigated): 3e

Typical Profile:
Ap—0 to 5 inches; fine sandy loam
Bt1—5 to 10 inches; sandy clay loam

Bt2—10 to 26 inches; sandy clay loam
Bt3—26 to 39 inches; fine sandy loam
2Btb—39 to 56 inches; silty clay
2Btkb1—56 to 66 inches; silty clay loam
2Btkb2—66 to 80 inches; silty clay loam

Naron
MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Loamy eolian deposits
Slope: 1 to 3 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 9.7 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Sandy (pe21-28)
Land capability (irrigated): 3e
Land capability (nonirrigated): 3e

Typical Profile:
Ap—0 to 8 inches; fine sandy loam
A—8 to 14 inches; fine sandy loam
Bt1—14 to 28 inches; sandy clay loam
Bt2—28 to 39 inches; sandy clay loam
Bt3—39 to 55 inches; sandy clay loam
BC—55 to 66 inches; fine sandy loam
C—66 to 80 inches; loamy fine sand

Minor Components
Funmar
Composition: About 10 percent
Slope: 0 to 1 percent
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe21-28)

Carway
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Ecological site: Subirrigated (pe21-28)

Carbika
Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Subirrigated (pe21-28)

Taver
Slope: 0 to 1 percent
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe21-28)

General Considerations: Most areas are in cropland, but some areas are in pasture or range. This mapunit is well suited for most commonly grown crops. Wheat, grain sorghum, soybeans, and irrigated corn. The hazard for wind and water erosion is slight. The depth to sand and potential for high shrink-swell may limit some engineering practices for this mapunit.

3540—Solvay loamy fine sand, 0 to 2 percent slopes

Map Unit Composition

Solvay: 90 percent
Minor components: 10 percent

Component Descriptions

Solvay
MLRA: 79 - Great Bend Sand Plains
Landform: Interdune on paleoterrace on river valley
Parent material: Loamy eolian deposits over alluvium
Slope: 0 to 2 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Moderately slow (About 0.20 in/hr)
Available water capacity: Moderate (About 9.0 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 24 to 48 inches
Runoff class: Very low
Ecological site: Subirrigated (pe21-28)
Land capability (nonirrigated): 2e

Typical Profile:
A—0 to 5 inches; loamy fine sand
2Bt1—5 to 14 inches; fine sandy loam
2Bt2—14 to 23 inches; fine sandy loam
2Bt3—23 to 37 inches; fine sandy loam
2BC1—37 to 58 inches; fine sandy loam
2BC2—58 to 76 inches; loamy fine sand
2BC3—76 to 80 inches; loamy fine sand

Minor Components
Hayes
Composition: About 10 percent
Slope: 0 to 2 percent
Drainage class: Well drained
Ecological site: Sandy (pe21-28)

Carway
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Ecological site: Subirrigated (pe21-28)

Carbika
Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Subirrigated (pe21-28)

General Considerations: Most areas are in gropland, but some areas are used for pasture and range. Many areas are in the Conservation Reserve Program. This mapunit is somewhat poorly suited for the most commonly grown crops. Wheat, grain sorghum and irrigated corn are the predominant crops. The hazard for wind erosion is severe and water erosion is slight. Conservation tillage, residue management, and tall grass barriers are ways to control wind erosion. The depth to water tables will limit many engineering practices.

3640—Tivin fine sand, 10 to 30 percent slopes

Map Unit Composition

Tivin: 95 percent
Minor components: 5 percent

Component Descriptions

Tivin
MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Sandy eolian deposits
Slope: 10 to 30 percent
Drainage class: Somewhat excessively drained
Slowest permeability: Rapid (About 5.95 in/hr)
Available water capacity: Low (About 3.2 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Ponding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Choppy Sands (pe21-28)
Land capability (nonirrigated): 6e

Typical Profile:
A—0 to 7 inches; fine sand
AC—7 to 18 inches; fine sand
C—18 to 80 inches; fine sand

Minor Components
Langdon
Composition: About 5 percent
Slope: 10 to 30 percent
Drainage class: Somewhat excessively drained
Ecological site: Choppy Sands (pe21-28)

Plev
Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Subirrigated (pe21-28)

General Considerations: Most areas are in pasture or range. This mapunit is poorly suited for the most commonly grown crops. The hazard for wind erosion is severe and water erosion is moderate. The sandy textures will limit most engineering practices.

An—Albion sandy loam, 1 to 4 percent slopes

Map Unit Composition

Albion: 100 percent

Component Descriptions

Albion
MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Loamy alluvium
Slope: 1 to 4 percent
Drainage class: Well drained
Slowest permeability: Moderately rapid (About 2.00 in/hr)
Available water capacity: Moderate (About 6.1 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very low
Ecological site: Sandy (pe20-25)
Land capability (nonirrigated): 3e

Typical Profile:
H1—0 to 11 inches; sandy loam
H2—11 to 24 inches; sandy loam
H3—24 to 60 inches; sand

As—Albion-Shellabarger sandy loams, 4 to 15 percent slopes

Map Unit Composition

Albion: 65 percent
Shellabarger: 35 percent

Component Descriptions

Albion
MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Loamy alluvium
Slope: 4 to 15 percent
Drainage class: Well drained
Slowest permeability: Moderately rapid (About 2.00 in/hr)
Available water capacity: Moderate (About 6.1 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Sandy (pe20-25)
Land capability (nonirrigated): 6e

Typical Profile:
H1—0 to 11 inches; sandy loam
H2—11 to 24 inches; sandy loam
H3—24 to 60 inches; sand

Shellabarger
MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Loamy alluvium
Slope: 4 to 15 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 10.0 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Sandy (pe20-25)
Land capability (nonirrigated): 6e

Typical Profile:
H1—0 to 12 inches; sandy loam
H2—12 to 60 inches; sandy clay loam

Minor Components
Unnamed Wet Soils
Phase: Sandy, Drainageway

At—Attica loamy fine sand, 1 to 4 percent slopes

Map Unit Composition

Attica: 100 percent

Component Descriptions

Attica
MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Eolian deposits
Slope: 1 to 4 percent
Drainage class: Well drained
Slowest permeability: Moderately rapid (About 2.00 in/hr)
Available water capacity: Moderate (About 7.7 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very low
Ecological site: Sandy (pe21-28)
Land capability (nonirrigated): 2e

Typical Profile:
H1—0 to 10 inches; loamy fine sand
H2—10 to 30 inches; fine sandy loam
H3—30 to 60 inches; fine sandy loam

Minor Components
Carwile

Unnamed Wet Soils
Phase: Sandy, Depression

Unnamed Wet Soils
Phase: Sandy, Drainageway

Ax—Attica-Carwile complex, 0 to 4 percent slopes

Map Unit Composition

Attica: 60 percent
Carwile: 40 percent

Component Descriptions

Attica
MLRA: 79 - Great Bend Sand Plains
Landform: Dune field on paleoterrace
Parent material: Sandy eolian deposits
Slope: 1 to 4 percent
Drainage class: Well drained
Slowest permeability: Moderately rapid (About 2.00 in/hr)
Available water capacity: Moderate (About 7.7 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very low
Ecological site: Sandy (pe21-28)
Land capability (nonirrigated): 2e

Typical Profile:
H1—0 to 10 inches; loamy fine sand
H2—10 to 30 inches; fine sandy loam
H3—30 to 60 inches; fine sandy loam

Carwile
MLRA: 79 - Great Bend Sand Plains
Landform: Depression
Parent material: Alluvium
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 9.4 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 0 to 0 inches
Runoff class: Negligible
Ecological site: Sandy (pe21-28)
Land capability (nonirrigated): 2w

Typical Profile:
H1—0 to 15 inches; fine sandy loam
H2—15 to 36 inches; clay
H3—36 to 60 inches; clay

Minor Components
Unnamed Wet Soils
Phase: Sandy, Depression

Unnamed Wet Soils
Phase: Sandy, Drainageway

BOP—Borrow Pits

Ca—Canadian fine sandy loam, rarely flooded

Map Unit Composition

Canadian: 100 percent

Component Descriptions

Canadian
MLRA: 78 - Central Rolling Red Plains
Landform: Flood plain on river valley
Parent material: Loamy alluvium
Slope: 0 to 2 percent
Drainage class: Well drained
Slowest permeability: Moderately rapid (About 1.98 in/hr)
Available water capacity: Moderate (About 8.3 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: Rare
Depth to seasonal water saturation: More than 6 feet
Runoff class: Negligible
Ecological site: Sandy Terrace (pe20-25)
Land capability (nonirrigated): 2e

Typical Profile:
H1—0 to 14 inches; fine sandy loam
H2—14 to 30 inches; fine sandy loam
H3—30 to 60 inches; fine sandy loam

Cc—Carwile fine sandy loam, 0 to 1 percent slopes

Map Unit Composition

Carwile: 100 percent

Component Descriptions

Carwile
MLRA: 79 - Great Bend Sand Plains
Landform: Depression
Parent material: Alluvium
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 9.4 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 0 to 0 inches
Runoff class: Medium
Ecological site: Sandy (pe21-28)
Land capability (nonirrigated): 2w

Typical Profile:
H1—0 to 15 inches; fine sandy loam
H2—15 to 36 inches; clay
H3—36 to 60 inches; clay

Ce—Case clay loam, 2 to 7 percent slopes

Map Unit Composition

Case: 100 percent

Component Descriptions

Case
MLRA: 78 - Central Rolling Red Plains
Landform: Paleoterrace on river valley
Parent material: Alluvium
Slope: 2 to 7 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 10.2 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Limy Upland (pe20-25)
Land capability (nonirrigated): 4e

Typical Profile:
H1—0 to 6 inches; clay loam
H2—6 to 60 inches; clay loam

Cf—Case clay loam, 7 to 15 percent slopes

Map Unit Composition

Case: 100 percent

Component Descriptions

Case
MLRA: 78 - Central Rolling Red Plains
Landform: Paleoterrace on river valley
Parent material: Alluvium
Slope: 7 to 15 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 10.2 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Limy Upland (pe20-25)
Land capability (nonirrigated): 6e

Typical Profile:
H1—0 to 6 inches; clay loam
H2—6 to 60 inches; clay loam

Cg—Case-Canlon complex, 7 to 20 percent slopes

Map Unit Composition

Case: 65 percent
Canlon: 35 percent

Component Descriptions

Case
MLRA: 78 - Central Rolling Red Plains
Landform: Paleoterrace on river valley
Parent material: Alluvium
Slope: 7 to 15 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 10.2 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Limy Upland (pe20-25)
Land capability (nonirrigated): 6e

Typical Profile:
H1—0 to 6 inches; clay loam
H2—6 to 60 inches; clay loam

Canlon
MLRA: 78 - Central Rolling Red Plains
Landform: Break on tableland
Parent material: Calcareous loamy residuum weathered from sandstone
Slope: 7 to 20 percent
Depth to restrictive feature: 10 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very low (About 2.7 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Shallow Limy (pe20-25)
Land capability (nonirrigated): 6s

Typical Profile:
H1—0 to 5 inches; loam
H2—5 to 14 inches; loam
R—14 to 14 inches; unweathered bedrock

Ck—Clark loam, 1 to 3 percent slopes

Map Unit Composition

Clark: 100 percent

Component Descriptions

Clark
MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Loamy alluvium
Slope: 1 to 3 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 10.2 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Limy Upland (pe20-25)
Land capability (nonirrigated): 3e

Typical Profile:
H1—0 to 5 inches; loam
H2—5 to 60 inches; clay loam

Cm—Clark loam, 3 to 7 percent slopes

Map Unit Composition

Clark: 100 percent

Component Descriptions

Clark
MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Loamy alluvium
Slope: 3 to 7 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 10.3 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Limy Upland (pe20-25)
Land capability (nonirrigated): 4e

Typical Profile:
H1—0 to 10 inches; loam
H2—10 to 60 inches; clay loam

Co—Coly silt loam, 4 to 9 percent slopes

Map Unit Composition

Coly: 100 percent

Component Descriptions

Coly
MLRA: 73 - Rolling Plains and Breaks
Landform: Hillslope on tableland
Parent material: Calcareous loess
Slope: 4 to 9 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 11.9 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Limy Upland (pe20-25)
Land capability (irrigated): 4e
Land capability (nonirrigated): 4e

Typical Profile:
H1—0 to 5 inches; silt loam
H2—5 to 60 inches; silt loam

Minor Components
Unnamed Wet Soils
Phase: Loamy, Drainageway

Cp—Coly silt loam, 20 to 40 percent slopes

Map Unit Composition

Coly: 100 percent

Component Descriptions

Coly
MLRA: 73 - Rolling Plains and Breaks
Landform: Hillslope on tableland
Parent material: Calcareous loess
Slope: 20 to 40 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 11.9 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: High
Ecological site: Loess Breaks (pe20-20)
Land capability (nonirrigated): 7e

Typical Profile:
H1—0 to 5 inches; silt loam
H2—5 to 60 inches; silt loam

Ct—Coly-Tobin silt loams, 0 to 20 percent slopes

Map Unit Composition

Coly: 70 percent
Tobin: 30 percent

Component Descriptions

Coly
MLRA: 73 - Rolling Plains and Breaks
Landform: Hillslope on tableland
Parent material: Calcareous loess
Slope: 9 to 20 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 11.9 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Limy Upland (pe20-25)
Land capability (nonirrigated): 6e

Typical Profile:
H1—0 to 5 inches; silt loam
H2—5 to 60 inches; silt loam

Tobin
MLRA: 73 - Rolling Plains and Breaks
Landform: Flood plain on river valley
Parent material: Silty alluvium
Slope: 0 to 2 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very high (About 12.2 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: Frequent
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Loamy Lowland (pe20-25)
Land capability (nonirrigated): 5w

Typical Profile:
H1—0 to 25 inches; silt loam
H2—25 to 32 inches; silt loam
H3—32 to 60 inches; silt loam

Minor Components
Unnamed Wet Soils
Phase: Loamy, Drainageway

Da—Dale silt loam, rarely flooded

Map Unit Composition

Dale: 100 percent

Component Descriptions

Dale
MLRA: 78 - Central Rolling Red Plains
Landform: Flood plain on river valley
Parent material: Silty alluvium
Slope: 0 to 2 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 11.8 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: Rare
Depth to seasonal water saturation: More than 6 feet
Runoff class: Negligible
Ecological site: Loamy Terrace (pe20-25)
Land capability (nonirrigated): 2e

Typical Profile:
H1—0 to 16 inches; silt loam
H2—16 to 60 inches; silty clay loam

Fa—Farnum loam, 0 to 1 percent slopes

Map Unit Composition

Farnum: 100 percent

Component Descriptions

Farnum
MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Loamy alluvium
Slope: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)

Available water capacity: High (About 10.4 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Negligible
Ecological site: Loamy Upland (pe21-28)
Land capability (irrigated): 1
Land capability (nonirrigated): 2c

Typical Profile:
H1—0 to 11 inches; loam
H2—11 to 54 inches; clay loam
H3—54 to 60 inches; clay loam

Minor Components
Carwile

Fb—Farnum loam, 1 to 3 percent slopes

Map Unit Composition

Farnum: 100 percent

Component Descriptions

Farnum
MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Loamy alluvium
Slope: 1 to 3 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 10.3 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Loamy Upland (pe21-28)
Land capability (irrigated): 2e
Land capability (nonirrigated): 2e

Typical Profile:
H1—0 to 11 inches; loam
H2—11 to 51 inches; clay loam
H3—51 to 60 inches; clay loam

Minor Components
Unnamed Wet Soils
Phase: Loamy, Drainageway

Ha—Harney silt loam, 0 to 1 percent slopes

Map Unit Composition

Harney: 100 percent

Component Descriptions

Harney
MLRA: 73 - Rolling Plains and Breaks
Landform: Plain on tableland
Parent material: Loess
Slope: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: Moderately slow (About 0.20 in/hr)
Available water capacity: High (About 11.1 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Loamy Upland (pe20-25)
Land capability (irrigated): 1
Land capability (nonirrigated): 2c

Typical Profile:
H1—0 to 5 inches; silt loam
H2—5 to 28 inches; silty clay loam
H3—28 to 60 inches; silt loam

Minor Components
Ness

Hb—Harney silt loam, 1 to 3 percent slopes

Map Unit Composition

Harney: 100 percent

Component Descriptions

Harney
MLRA: 73 - Rolling Plains and Breaks
Landform: Plain on tableland
Parent material: Loess
Slope: 1 to 3 percent
Drainage class: Well drained
Slowest permeability: Moderately slow (About 0.20 in/hr)
Available water capacity: High (About 11.1 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Loamy Upland (pe20-25)
Land capability (irrigated): 2e
Land capability (nonirrigated): 2e

Typical Profile:
H1—0 to 5 inches; silt loam
H2—5 to 28 inches; silty clay loam
H3—28 to 60 inches; silty clay loam

He—Hedville-Rock outcrop complex, 15 to 30 percent slopes

Map Unit Composition

Hedville: 70 percent
Rock outcrop: 30 percent

Component Descriptions

Hedville
MLRA: 78 - Central Rolling Red Plains
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Loamy residuum weathered from sandstone and shale
Slope: 15 to 30 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very low (About 2.3 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: High
Ecological site: Shallow Sandstone (pe20-25)
Land capability (nonirrigated): 7s

Typical Profile:
H1—0 to 11 inches; fine sandy loam
H2—11 to 15 inches; cobbly loam
R—15 to 15 inches; unweathered bedrock

Rock outcrop
MLRA: 78 - Central Rolling Red Plains
Landform: Break
Parent material: Residuum
Slope: 20 to 30 percent
Drainage class: Excessively drained
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: High
Land capability (nonirrigated): 8

Ho—Holdrege silt loam, 0 to 1 percent slopes

Map Unit Composition

Holdrege: 100 percent

Component Descriptions

Holdrege
MLRA: 73 - Rolling Plains and Breaks
Landform: Plain on tableland
Parent material: Loess
Slope: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)

Available water capacity: Very high (About 12.2 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Negligible
Ecological site: Loamy Upland (pe20-25)
Land capability (irrigated): 1
Land capability (nonirrigated): 2c

Typical Profile:
H1—0 to 10 inches; silt loam
H2—10 to 27 inches; silty clay loam
H3—27 to 32 inches; silty clay loam
H4—32 to 60 inches; silt loam

Hp—Holdrege silt loam, 1 to 3 percent slopes

Map Unit Composition

Holdrege: 100 percent

Component Descriptions

Holdrege
MLRA: 73 - Rolling Plains and Breaks
Landform: Plain on tableland
Parent material: Loess
Slope: 1 to 3 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very high (About 12.2 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Loamy Upland (pe20-25)
Land capability (irrigated): 2e
Land capability (nonirrigated): 2e

Typical Profile:
H1—0 to 10 inches; silt loam
H2—10 to 27 inches; silty clay loam
H3—27 to 32 inches; silty clay loam
H4—32 to 60 inches; silt loam

Kr—Krier sandy loam, occasionally flooded

Map Unit Composition

Krier: 100 percent

Component Descriptions

Krier
MLRA: 78 - Central Rolling Red Plains
Landform: Flood plain on river valley
Parent material: Alluvium
Slope: 0 to 2 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Moderately rapid (About 2.00 in/hr)
Available water capacity: Low (About 4.1 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: Occasional
Depth to seasonal water saturation: About 12 to 36 inches
Runoff class: Negligible
Ecological site: Saline Subirrigated (pe20-25)
Land capability (nonirrigated): 6s

Typical Profile:
H1—0 to 5 inches; sandy loam
H2—5 to 11 inches; sandy loam
H3—11 to 60 inches; sand

Minor Components
Unnamed Wet Soils
Phase: Sandy, Depression

Lh—Lancaster-Hedville complex, 4 to 20 percent slopes

Map Unit Composition

Lancaster: 65 percent
Hedville: 35 percent

Component Descriptions

Lancaster
MLRA: 78 - Central Rolling Red Plains
Landform: Hillslope on upland

Parent material: Loamy residuum weathered from sandstone and shale
Slope: 4 to 12 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Low (About 4.3 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Loamy Upland (pe20-25)
Land capability (nonirrigated): 6e

Typical Profile:
H1—0 to 13 inches; loam
H2—13 to 23 inches; loam
Cr—23 to 23 inches; weathered bedrock

Hedville
MLRA: 78 - Central Rolling Red Plains
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Loamy residuum weathered from sandstone and shale
Slope: 4 to 20 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very low (About 2.3 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Shallow Sandstone (pe20-25)
Land capability (nonirrigated): 7s

Typical Profile:
H1—0 to 11 inches; fine sandy loam
H2—11 to 15 inches; cobbly loam
R—15 to 15 inches; unweathered bedrock

Ln—Lincoln sandy loam, occasionally flooded

Map Unit Composition

Lincoln: 100 percent

Component Descriptions

Lincoln
MLRA: 78 - Central Rolling Red Plains
Landform: Flood plain on river valley
Parent material: Alluvium
Slope: 0 to 2 percent
Drainage class: Somewhat excessively drained
Slowest permeability: Rapid (About 5.95 in/hr)
Available water capacity: Low (About 3.6 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: Occasional
Depth to seasonal water saturation: About 60 to 72 inches
Runoff class: Negligible
Ecological site: Sandy Lowland (pe20-25)
Land capability (nonirrigated): 6w

Typical Profile:
H1—0 to 8 inches; sandy loam
H2—8 to 60 inches; stratified fine sand to loamy fine sand

Minor Components
Plevna

Unnamed Wet Soils
Phase: Sandy, Drainageway

M-W—Miscellaneous Water

Map Unit Composition

Miscellaneous Water: 100 percent

Component Descriptions

Miscellaneous Water
MLRA: -
Depth to seasonal water saturation: More than 6 feet

Na—Naron fine sandy loam, 0 to 1 percent slopes

Map Unit Composition

Naron: 100 percent

Component Descriptions

Naron
MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Loamy eolian deposits
Slope: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 9.5 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Negligible
Ecological site: Sandy (pe21-28)
Land capability (irrigated): 1
Land capability (nonirrigated): 2e

Typical Profile:
H1—0 to 10 inches; fine sandy loam
H2—10 to 48 inches; sandy clay loam
H3—48 to 60 inches; fine sandy loam

Minor Components
Carwile

Unnamed Wet Soils
Phase: Loamy, Depression

Nb—Naron fine sandy loam, 1 to 3 percent slopes

Map Unit Composition

Naron: 100 percent

Component Descriptions

Naron
MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Loamy eolian deposits
Slope: 1 to 3 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 9.5 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Sandy (pe21-28)
Land capability (irrigated): 2e
Land capability (nonirrigated): 3e

Typical Profile:
H1—0 to 10 inches; fine sandy loam
H2—10 to 48 inches; sandy clay loam
H3—48 to 60 inches; fine sandy loam

Minor Components
Carwile

Unnamed Wet Soils
Phase: Loamy, Depression

Unnamed Wet Soils
Phase: Loamy, Drainageway

Ne—Ness silty clay

Map Unit Composition

Ness: 100 percent

Component Descriptions

Ness
MLRA: 78 - Central Rolling Red Plains
Landform: Playa on tableland
Parent material: Alluvium
Slope: 0 to 1 percent
Drainage class: Poorly drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Moderate (About 8.1 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Ponding hazard: Frequent

Depth to seasonal water saturation: About 0 to 0 inches
Runoff class: High
Ecological site: Lakebed (pe20-25)
Land capability (nonirrigated): 6w

Typical Profile:
H1—0 to 38 inches; silty clay
H2—38 to 60 inches; silty clay loam

Nw—New Cambria silty clay, rarely flooded

Map Unit Composition

New Cambria: 100 percent

Component Descriptions

New Cambria
MLRA: 73 - Rolling Plains and Breaks
Landform: Stream terrace on river valley
Parent material: Calcareous clayey alluvium
Slope: 0 to 2 percent
Drainage class: Moderately well drained
Slowest permeability: Impermeable (About 0.00 in/hr)
Available water capacity: Moderate (About 8.6 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: Rare
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Clay Terrace (pe20-25)
Land capability (irrigated): 2s
Land capability (nonirrigated): 2s

Typical Profile:
H1—0 to 12 inches; silty clay
H2—12 to 36 inches; silty clay
H3—36 to 60 inches; silty clay

Oe—Wellsford clay, 6 to 25 percent slopes

Map Unit Composition

Owens: 100 percent

Component Descriptions

Owens
MLRA: 78 - Central Rolling Red Plains
Landform: Hillslope on upland
Parent material: Residuum weathered from clayey shale
Slope: 6 to 25 percent
Depth to restrictive feature: 10 to 20 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Very low (About 1.8 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very high
Ecological site: Blue Shale (pe20-25)
Land capability (nonirrigated): 6e

Typical Profile:
H1—0 to 6 inches; clay
H2—6 to 15 inches; clay
Cr—15 to 15 inches; weathered bedrock

Pe—Plevna loam,frequently flooded

Map Unit Composition

Plevna: 100 percent

Component Descriptions

Plevna
MLRA: 79 - Great Bend Sand Plains
Landform: Flood plain on river valley
Parent material: Alluvium
Slope: 0 to 1 percent
Drainage class: Poorly drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Moderate (About 7.8 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: Frequent
Depth to seasonal water saturation: About 0 to 24 inches

Runoff class: Negligible
Ecological site: Subirrigated (pe20-25)
Land capability (nonirrigated): 5w

Typical Profile:
H1—0 to 9 inches; loam
H2—9 to 48 inches; sandy loam
H3—48 to 60 inches; sand

Minor Components
Unnamed Wet Soils
Phase: Sandy, Drainageway

Pr—Pratt loamy fine sand, 1 to 5 percent slopes

Map Unit Composition

Pratt: 100 percent

Component Descriptions

Pratt
MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Sandy eolian deposits
Slope: 1 to 5 percent
Drainage class: Well drained
Slowest permeability: Rapid (About 5.95 in/hr)
Available water capacity: Moderate (About 6.4 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very low
Ecological site: Sands (pe21-28)
Land capability (irrigated): 3e
Land capability (nonirrigated): 3e

Typical Profile:
H1—0 to 12 inches; loamy fine sand
H2—12 to 36 inches; loamy fine sand
H3—36 to 60 inches; loamy fine sand

Minor Components
Carwile

Unnamed Wet Soils
Phase: Sandy, Depression

Ps—Pratt loamy fine sand, 5 to 10 percent slopes

Map Unit Composition

Pratt: 100 percent

Component Descriptions

Pratt
MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Sandy eolian deposits
Slope: 5 to 10 percent
Drainage class: Well drained
Slowest permeability: Rapid (About 5.95 in/hr)
Available water capacity: Moderate (About 6.4 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very low
Ecological site: Sands (pe21-28)
Land capability (irrigated): 3e
Land capability (nonirrigated): 4e

Typical Profile:
H1—0 to 12 inches; loamy fine sand
H2—12 to 36 inches; loamy fine sand
H3—36 to 60 inches; loamy fine sand

Minor Components
Carwile

Pt—Pratt-Tivoli loamy fine sands, 5 to 15 percent slopes

Map Unit Composition

Pratt: 60 percent
Tivoli: 40 percent

Component Descriptions

Pratt
MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley

Parent material: Sandy eolian deposits
Slope: 5 to 15 percent
Drainage class: Well drained
Slowest permeability: Rapid (About 5.95 in/hr)
Available water capacity: Moderate (About 6.3 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Sands (pe21-28)
Land capability (nonirrigated): 6e

Typical Profile:
H1—0 to 10 inches; loamy fine sand
H2—10 to 32 inches; loamy fine sand
H3—32 to 60 inches; fine sand

Tivoli
MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Sandy eolian deposits
Slope: 5 to 15 percent
Drainage class: Excessively drained
Slowest permeability: Rapid (About 5.95 in/hr)
Available water capacity: Low (About 3.2 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Sands (pe21-28)
Land capability (nonirrigated): 7e

Typical Profile:
H1—0 to 7 inches; loamy fine sand
H2—7 to 60 inches; fine sand

Qw—Quinlan-Woodward loams, 6 to 25 percent slopes

Map Unit Composition

Quinlan: 55 percent
Woodward: 45 percent

Component Descriptions

Quinlan
MLRA: 78 - Central Rolling Red Plains
Landform: Upland
Parent material: Loamy residuum weathered from calcareous sandstone
Slope: 6 to 25 percent
Depth to restrictive feature: 10 to 20 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very low (About 2.8 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Shallow Prairie (pe20-25)
Land capability (nonirrigated): 6e

Typical Profile:
H1—0 to 15 inches; loam
Cr—15 to 15 inches; weathered bedrock

Woodward
MLRA: 78 - Central Rolling Red Plains
Landform: Upland
Parent material: Coarse-silty residuum weathered from calcareous sandstone
Slope: 6 to 20 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Low (About 4.6 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Loamy Upland (pe20-25)
Land capability (nonirrigated): 6e

Typical Profile:
H1—0 to 27 inches; loam
Cr—27 to 27 inches; weathered bedrock

SAP—sand Pits

Sh—Shellabarger loam, 2 to 6 percent slopes

Map Unit Composition

Shellabarger: 100 percent

Component Descriptions

Shellabarger
MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on tableland
Parent material: Loamy alluvium
Slope: 2 to 6 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 10.5 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Sandy (pe20-25)
Land capability (nonirrigated): 3e

Typical Profile:
H1—0 to 11 inches; loam
H2—11 to 60 inches; sandy loam

Th—Tivoli fine sand, 15 to 30 percent slopes

Map Unit Composition

Tivoli: 100 percent

Component Descriptions

Tivoli
MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Sandy eolian deposits
Slope: 10 to 30 percent
Drainage class: Excessively drained
Slowest permeability: Rapid (About 5.95 in/hr)
Available water capacity: Very low (About 3.0 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Choppy Sands (pe21-28)
Land capability (nonirrigated): 7e

Typical Profile:
H1—0 to 6 inches; fine sand
H2—6 to 60 inches; fine sand

To—Tobin silt loam, channeled

Map Unit Composition

Tobin: 100 percent

Component Descriptions

Tobin
MLRA: 73 - Rolling Plains and Breaks
Landform: Flood plain on river valley
Parent material: Silty alluvium
Slope: 0 to 2 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very high (About 12.2 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: Frequent
Depth to seasonal water saturation: More than 6 feet
Runoff class: Negligible
Ecological site: Loamy Lowland (pe20-25)
Land capability (nonirrigated): 5w

Typical Profile:
H1—0 to 25 inches; silt loam
H2—25 to 33 inches; silt loam
H3—33 to 60 inches; silt loam

Ts—Tobin silt loam, occasionally flooded

Map Unit Composition

Tobin: 100 percent

Component Descriptions

Tobin
MLRA: 73 - Rolling Plains and Breaks
Landform: Flood plain on river valley
Parent material: Silty alluvium
Slope: 0 to 2 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very high (About 12.2 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: Occasional
Depth to seasonal water saturation: More than 6 feet
Runoff class: Negligible
Ecological site: Loamy Lowland (pe20-25)
Land capability (nonirrigated): 2w

Typical Profile:
H1—0 to 25 inches; silt loam
H2—25 to 33 inches; silt loam
H3—33 to 60 inches; silt loam

Uc—Uly silt loam, 3 to 7 percent slopes

Map Unit Composition

Uly: 100 percent

Component Descriptions

Uly
MLRA: 73 - Rolling Plains and Breaks
Landform: Hillslope on tableland
Parent material: Loess
Slope: 3 to 7 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very high (About 12.0 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Loamy Upland (pe20-25)
Land capability (irrigated): 3e
Land capability (nonirrigated): 3e

Typical Profile:
H1—0 to 10 inches; silt loam
H2—10 to 22 inches; silt loam
H3—22 to 60 inches; silt loam

W—Water

Wa—Waldeck loam, occasionally flooded

Map Unit Composition

Waldeck: 100 percent

Component Descriptions

Waldeck
MLRA: 78 - Central Rolling Red Plains
Landform: Flood plain, river valley
Parent material: Coarse-loamy alluvium
Slope: 0 to 2 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Moderately rapid (About 2.00 in/hr)
Available water capacity: Moderate (About 7.8 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: Occasional
Depth to seasonal water saturation: About 24 to 48 inches
Runoff class: Very low
Ecological site: Subirrigated (pe20-25)
Land capability (nonirrigated): 3w

Typical Profile:
H1—0 to 14 inches; loam
H2—14 to 41 inches; fine sandy loam
H3—41 to 60 inches; fine sand

Minor Components
Unnamed Wet Soils
Phase: Sandy, Drainageway

PRIME FARMLAND
Kiowa County, Kansas

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation’s short– and long–range needs for food and fiber. Because the supply of high–quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation’s prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built–up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in the following table. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in the "Acres and Proportionate Extent of Soils" table. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described in other tables in this document."

PRIME FARMLAND--Continued
Kiowa County, Kansas : Published

Map symbol	Mapunit name	Farmland Classification
025SH	Shellabarger loam, 2 to 5 percent slopes	All areas are prime farmland
033AC	Abilene silt loam, 1 to 3 percent slopes	All areas are prime farmland
033CK	Case clay loam, 3 to 7 percent slopes	All areas are prime farmland
033CS	Clark clay loam, 1 to 3 percent slopes	All areas are prime farmland
033CT	Clark clay loam, 3 to 6 percent slopes	All areas are prime farmland
033ED	Elandco silt loam, occasionally flooded	All areas are prime farmland
033SH	Shellabarger sandy loam, 1 to 3 percent slopes	All areas are prime farmland
033SM	Shellabarger sandy loam, 3 to 6 percent slopes	All areas are prime farmland
047WA	Waldeck fine sandy loam, occasionally flooded	All areas are prime farmland
151BC	Blanket silty clay loam, 1 to 4 percent slopes, eroded	All areas are prime farmland
151BH	Blanket silt loam, 1 to 3 percent slopes	All areas are prime farmland
151FE	Farnum fine sandy loam, 0 to 1 percent slopes	All areas are prime farmland
151NM	Naron loam, 1 to 3 percent slopes	All areas are prime farmland
151SE	Shellabarger fine sandy loam, 1 to 4 percent slopes	All areas are prime farmland
1725	Farnum and funmar loams, 0 to 1 percent slopes	All areas are prime farmland
1726	Funmar and farnum loams, 1 to 3 percent slopes	All areas are prime farmland
1985	Hayes fine sandy loam, 1 to 5 percent slopes	All areas are prime farmland
3512	Saltcreek and naron fine sandy loams, 1 to 3 percent slopes	All areas are prime farmland
Ca	Canadian fine sandy loam, rarely flooded	All areas are prime farmland
Ce	Case clay loam, 2 to 7 percent slopes	All areas are prime farmland
Ck	Clark loam, 1 to 3 percent slopes	All areas are prime farmland
Cm	Clark loam, 3 to 7 percent slopes	All areas are prime farmland
Da	Dale silt loam, rarely flooded	All areas are prime farmland
Fa	Farnum loam, 0 to 1 percent slopes	All areas are prime farmland
Fb	Farnum loam, 1 to 3 percent slopes	All areas are prime farmland
Ha	Harney silt loam, 0 to 1 percent slopes	All areas are prime farmland
Hb	Harney silt loam, 1 to 3 percent slopes	All areas are prime farmland
Ho	Holdrege silt loam, 0 to 1 percent slopes	All areas are prime farmland
Hp	Holdrege silt loam, 1 to 3 percent slopes	All areas are prime farmland
Na	Naron fine sandy loam, 0 to 1 percent slopes	All areas are prime farmland
Nb	Naron fine sandy loam, 1 to 3 percent slopes	All areas are prime farmland
Nw	New cambria silty clay, rarely flooded	All areas are prime farmland
Sh	Shellabarger loam, 2 to 6 percent slopes	All areas are prime farmland
Ts	Tobin silt loam, occasionally flooded	All areas are prime farmland
Uc	Uly silt loam, 3 to 7 percent slopes	All areas are prime farmland
Wa	Waldeck loam, occasionally flooded	All areas are prime farmland
An	Albion sandy loam, 1 to 4 percent slopes	Prime farmland if irrigated

SOIL RATING FOR PLANT GROWTH, modified 1998
Kiowa County, Kansas

The "Soil Rating for Plant Growth, modified 1998" (SRPG) is a relative rating of the capacity of a soil to produce a specific plant under a defined management system. The index is determined from yield data on a few benchmark soils and is used to calculate yields, the net returns from crops, land assessment values, and taxes and to perform risk analysis when land management decisions are made. Specific information on plants and yields can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Map symbol	Soil name	Crop Index
007CF	Clairemont Soils, Channeled	41
025AB	Albion–Shellabarger Sandy Loams, 6 To 12 Percent Slopes	42
025PG	Penden Clay Loam, 7 To 15 Percent Slopes	27
025SH	Shellabarger Loam, 2 To 5 Percent Slopes	58
033AC	Abilene Silt Loam, 1 To 3 Percent Slopes	59
033CK	Case Clay Loam, 3 To 7 Percent Slopes	44
033CS	Clark Clay Loam, 1 To 3 Percent Slopes	33
033CT	Clark Clay Loam, 3 To 6 Percent Slopes	32
033ED	Elandco Silt Loam, Occasionally Flooded	55
033EF	Elandco Silt Loam, Channeled	43
033KC	Kanza Loamy Fine Sand, Frequently Flooded	26
033LN	Lincoln Loamy Sand, Occasionally Flooded	22
033QR	Quinlan – Woodward Loams, 6 To 15 Percent Slopes	19
033SH	Shellabarger Sandy Loam, 1 To 3 Percent Slopes	65
033SM	Shellabarger Sandy Loam, 3 To 6 Percent Slopes	63
047PA	Platte Soils, Occasionally Flooded	24
047WA	Waldeck Fine Sandy Loam, Occasionally Flooded	35
057HD	Holdrege Fine Sandy Loam, 1 To 3 Percent Slopes	68
057PR	Pratt Loamy Fine Sand, 3 To 10 Percent Slopes	32
057PT	Pratt–Tivoli Loamy Fine Sands, 4 To 15 Percent Slopes	27
057TV	Tivoli Fine Sand, 5 To 20 Percent Slopes	20
1324	Carway And Carbika Soils, 0 To 1 Percent Slopes	33
151BC	Blanket Silty Clay Loam, 1 To 4 Percent Slopes, Eroded	64
151BH	Blanket Silt Loam, 1 To 3 Percent Slopes	66
151FE	Farnum Fine Sandy Loam, 0 To 1 Percent Slopes	68
151NM	Naron Loam, 1 To 3 Percent Slopes	68
151SE	Shellabarger Fine Sandy Loam, 1 To 4 Percent Slopes	64
1725	Farnum And Funmar Loams, 0 To 1 Percent Slopes	76
1726	Funmar And Farnum Loams, 1 To 3 Percent Slopes	74
1985	Hayes Fine Sandy Loam, 1 To 5 Percent Slopes	57
1986	Hayes–Solvay Loamy Fine Sands, 0 To 5 Percent Slopes	52
1988	Hayes Loamy Fine Sand, 5 To 10 Percent Slopes	49
2556	Langdon Fine Sand, 0 To 15 Percent Slopes	26
3512	Saltcreek And Naron Fine Sandy Loams, 1 To 3 Percent Slopes	65
3540	Solvay Loamy Fine Sand, 0 To 2 Percent Slopes	66
3640	Tivin Fine Sand, 10 To 30 Percent Slopes	17
An	Albion Sandy Loam, 1 To 4 Percent Slopes	41
As	Albion–Shellabarger Sandy Loams, 4 To 15 Percent Slopes	44
At	Attica Loamy Fine Sand, 1 To 4 Percent Slopes	47
Ax	Attica–Carwile Complex, 0 To 4 Percent Slopes	36
BOP	Borrow Pits	0
Ca	Canadian Fine Sandy Loam, Rarely Flooded	52
Cc	Carwile Fine Sandy Loam, 0 To 1 Percent Slopes	20
Ce	Case Clay Loam, 2 To 7 Percent Slopes	43
Cf	Case Clay Loam, 7 To 15 Percent Slopes	38
Cg	Case–Canlon Complex, 7 To 20 Percent Slopes	27
Ck	Clark Loam, 1 To 3 Percent Slopes	32
Cm	Clark Loam, 3 To 7 Percent Slopes	31
Co	Coly Silt Loam, 4 To 9 Percent Slopes	54
Cp	Coly Silt Loam, 20 To 40 Percent Slopes	10
Ct	Coly–Tobin Silt Loams, 0 To 20 Percent Slopes	46
Da	Dale Silt Loam, Rarely Flooded	62
Fa	Farnum Loam, 0 To 1 Percent Slopes	69
Fb	Farnum Loam, 1 To 3 Percent Slopes	68
Ha	Harney Silt Loam, 0 To 1 Percent Slopes	70
Hb	Harney Silt Loam, 1 To 3 Percent Slopes	69
He	Hedville–Rock Outcrop Complex, 15 To 30 Percent Slopes	6
Ho	Holdrege Silt Loam, 0 To 1 Percent Slopes	70
Hp	Holdrege Silt Loam, 1 To 3 Percent Slopes	70
Kr	Krier Sandy Loam, Occasionally Flooded	19
Lh	Lancaster–Hedville Complex, 4 To 20 Percent Slopes	18
Ln	Lincoln Sandy Loam, Occasionally Flooded	23
M–W	Miscellaneous Water	0
Na	Naron Fine Sandy Loam, 0 To 1 Percent Slopes	66
Nb	Naron Fine Sandy Loam, 1 To 3 Percent Slopes	65
Ne	Ness Silty Clay	11
Nw	New Cambria Silty Clay, Rarely Flooded	46
Oe	Wellsford Clay, 6 To 25 Percent Slopes	5
Pe	Plevna Loam, Frequently Flooded	35
Pr	Pratt Loamy Fine Sand, 1 To 5 Percent Slopes	37
Ps	Pratt Loamy Fine Sand, 5 To 10 Percent Slopes	34
Pt	Pratt–Tivoli Loamy Fine Sands, 5 To 15 Percent Slopes	27
Qw	Quinlan–Woodward Loams, 6 To 25 Percent Slopes	16
SAP	Sand Pits	0
Sh	Shellabarger Loam, 2 To 6 Percent Slopes	67
Th	Tivoli Fine Sand, 15 To 30 Percent Slopes	12
To	Tobin Silt Loam, Channeled	49
Ts	Tobin Silt Loam, Occasionally Flooded	62
Uc	Uly Silt Loam, 3 To 7 Percent Slopes	66
W	Water	0
Wa	Waldeck Loam, Occasionally Flooded	43

SOIL RATING FOR PLANT GROWTH, modified 1998
Kiowa County, Kansas

The "Soil Rating for Plant Growth, modified 1998" (SRPG) is a relative rating of the capacity of a soil to produce a specific plant under a defined management system. The index is determined from yield data on a few benchmark soils and is used to calculate yields, the net returns from crops, land assessment values, and taxes and to perform risk analysis when land management decisions are made. Specific information on plants and yields can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Map symbol	Soil name	Crop Index

Kiowa County, Kansas: Published
Field Office Thunderbook: Soils Properties for Conservation Planning

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "K", "Kf", "Wind Erodibility Group" and "Wind Erodibility Index" apply only to the surface layer)

Map symbol and soil name	Percent	Irr Cap Class	Nonirr Cap Class	Prime Farmland	Hydro-logic Group	Range site name	Windbreak suitability group	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
								K	Kf	T		
007CF:CLAIREMONT	100	N/A	5w	Not prime farmland	B	Loamy Lowland (pe20-25)	5	.43	.43	5	4L	86
025AB:ALBION----	65	N/A	6e	Not prime farmland	B	Sandy (pe20-25)	3	.20	.20	4	3	86
	60	N/A	6e	Not prime farmland	B	Sandy (pe20-25)	3	.20	.20	4	3	86
025AB:SHELLABARGER----------	40	N/A	6e	Not prime farmland	B	Sandy (pe20-25)	3	.20	.20	-	3	86
	35	N/A	6e	Not prime farmland	B	Sandy (pe20-25)	3	.20	.20	5	3	86
025PG:PENDEN----	100	N/A	6e	Not prime farmland	B	Limy Upland (pe20-25)	5	.28	.28	5	4L	86
025SH:SHELLABARGER----------	100	N/A	3e	All areas are prime farmland	B	Sandy (pe20-25)	7	.28	.28	5	6	48
	100	N/A	3e	All areas are prime farmland	B	Sandy (pe20-25)	7	.28	.28	5	6	48
033AC:ABILENE---	100	2e-	2e	All areas are prime farmland	C	Loamy Upland (pe20-25)	7	.37	.37	5	6	48
033CK:CASE------	100	N/A	4e	All areas are prime farmland	B	Limy Upland (pe20-25)	5	.32	.32	5	4L	86
033CS:CLARK-----	100	N/A	3e	All areas are prime farmland	B	Limy Upland (pe20-25)	5	.28	.28	5	4L	86
033CT:CLARK-----	100	N/A	4e	All areas are prime farmland	B	Limy Upland (pe20-25)	5	.28	.28	5	4L	86
033ED:ELANDCO---	100	N/A	2w	All areas are prime farmland	B	Loamy Lowland (pe20-25)	7	.43	.43	5	6	48
033EF:ELANDCO---	100	N/A	6w	Not prime farmland	B	Loamy Lowland (pe20-25)	7	.43	.43	5	6	48
033KC:KANZA-----	100	N/A	5w	Not prime farmland	D	Unspecified	2	.17	.17	5	2	134
033LN:LINCOLN---	100	N/A	6w	Not prime farmland	A	Sandy Lowland (pe20-25)	2	.17	.17	5	2	134
033QR:QUINLAN---	55	N/A	6e	Not prime farmland	C	Shallow Prairie (pe20-25)	5	.37	.37	2	4L	86
033QR:WOODWARD--	45	N/A	6e	Not prime farmland	B	Loamy Upland (pe20-25)	5	.37	.37	3	4L	86
033SH:SHELLABARGER----------	100	N/A	2e	All areas are prime farmland	B	Sandy (pe20-25)	3	.20	.24	5	3	86

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Field Office Thunderbook: Soils Properties for Conservation Planning--Continued

Map symbol and soil name	Percent	Irr Cap Class	Nonirr Cap Class	Prime Farmland	Hydro-logic Group	Range site name	Windbreak suitability group	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
								K	Kf	T		
033SM:SHELLABARGER	100	N/A	3e	All areas are prime farmland	B	Sandy (pe20-25)	3	.20	.24	5	3	86
047PA:PLATTE	100	4w-	4w	Not prime farmland	B	Subirrigated (pe21-28)	5	.28	.28	5	4L	86
047WA:WALDECK	100	N/A	3w	All areas are prime farmland	C	Subirrigated (pe21-28)	3	.20	.20	4	3	86
057HD:HOLDREGE	100	2e-	2e	Not prime farmland	B	Loamy Upland (pe20-26)	3	.32	.32	5	3	86
057PR:PRATT	100	3e-	4e	Not prime farmland	A	Sands (pe20-26)	2	.17	.17	5	2	134
057PT:PRATT	60	3e-	4e	Not prime farmland	A	Sands (pe20-26)	2	.17	.17	5	2	134
057PT:TIVOLI	40	N/A	6e	Not prime farmland	A	Sands (pe20-26)	2	.17	.17	5	2	134
057TV:TIVOLI	100	N/A	7e	Not prime farmland	A	Choppy Sands (pe20-26)	1	.15	.15	5	1	250
1324:NESS	100	N/A	6w	Not prime farmland	D	Lakebed (pe20-25)	4	.28	.28	5	4	86
1324:CARWAY	50	N/A	2w	Not prime farmland	D	Subirrigated (pe21-28)	3	.20	.20	5	3	86
1324:CARBIKA	30	N/A	2w	Not prime farmland	D	Subirrigated (pe21-28)	6	.24	.24	5	5	56
151BC:BLANKET	100	N/A	3e	All areas are prime farmland	C	Loamy Upland (pe21-28)	7	.37	.37	5	6	48
151BH:BLANKET	100	N/A	2e	All areas are prime farmland	C	Loamy Upland (pe21-28)	7	.37	.37	5	6	48
151FE:FARNUM	100	1-	2e	All areas are prime farmland	B	Sandy (pe21-28)	3	.20	.20	5	3	86
151NM:NARON	100	2e-	2e	All areas are prime farmland	B	Sandy (pe21-28)	6	.28	.28	5	5	56
151SE:SHELLABARGER	100	N/A	2e	All areas are prime farmland	B	Sandy (pe21-28)	3	.20	.20	5	3	86
1725:FARNUM	100	1-	2c	All areas are prime farmland	B	Loamy Upland (pe21-28)	7	.28	.28	5	6	48
1725:HARNEY	100	1-	2c	All areas are prime farmland	B	Loamy Upland (pe20-25)	7	.32	.32	5	6	48
1725:FUNMAR	40	1-	2c	All areas are prime farmland	C	Loamy Upland (pe21-28)	7	.28	.28	5	6	56

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Field Office Thunderbook: Soils Properties for Conservation Planning--Continued

Map symbol and soil name	Percent	Irr Cap Class	Nonirr Cap Class	Prime Farmland	Hydro-logic Group	Range site name	Windbreak suitability group	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
								K	Kf	T		
1725:FARNUM-----	40	1-	2c	All areas are prime farmland	B	Loamy Upland (pe21-28)	7	.28	.28	5	6	56
1726:FARNUM-----	100	2e-	2e	All areas are prime farmland	B	Loamy Upland (pe21-28)	7	.28	.28	5	6	48
	40	1-	2c	All areas are prime farmland	B	Loamy Upland (pe21-28)	7	.28	.28	5	6	56
1726:FUNMAR-----	40	1-	2c	All areas are prime farmland	C	Loamy Upland (pe21-28)	7	.28	.28	5	6	56
1985:ATTICA-----	100	N/A	2e	Not prime farmland	B	Sandy (pe21-28)	2	.17	.17	5	2	134
1985:PRATT------	100	3e-	3e	Not prime farmland	A	Sands (pe21-28)	2	.17	.17	5	2	134
1985:HAYES------	60	3e-	3e	All areas are prime farmland	B	Sandy (pe21-28)	3	.20	.20	5	3	86
1986:ATTICA-----	60	N/A	2e	Not prime farmland	B	Sandy (pe21-28)	2	.17	.17	5	2	134
1986:HAYES------	55	3e-	3e	Not prime farmland	B	Sandy (pe21-28)	2	.17	.17	5	2	134
1986:CARWILE----	40	N/A	2w	Not prime farmland	D	Sandy (pe21-28)	3	.24	.24	5	3	86
1986:SOLVAY-----	20	N/A	2e	Not prime farmland	D	Subirrigated (pe21-28)	2	.17	.17	5	2	134
1988:PRATT------	100	3e-	4e	Not prime farmland	A	Sands (pe21-28)	2	.17	.17	5	2	134
1988:HAYES------	70	3e-	3e	Not prime farmland	B	Sandy (pe21-28)	3	.20	.20	5	3	86
2556:PRATT------	60	N/A	6e	Not prime farmland	A	Sands (pe21-28)	2	.17	.17	5	2	134
2556:LANGDON----	50	N/A	6e	Not prime farmland	A	Choppy Sands (pe21-28)	1	.15	.15	5	1	220
2556:TIVOLI-----	40	N/A	7e	Not prime farmland	A	Sands (pe21-28)	2	.17	.17	5	2	134
3512:NARON------	100	1-	2e	All areas are prime farmland	B	Sandy (pe21-28)	3	.20	.20	5	3	86
	100	2e-	3e	All areas are prime farmland	B	Sandy (pe21-28)	3	.20	.20	5	3	86
3512:SALTCREEK--	50	1-	3e	All areas are prime farmland	C	Sandy (pe21-28)	3	.20	.20	5	3	86

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Field Office Thunderbook: Soils Properties for Conservation Planning--Continued

Map symbol and soil name	Percent	Irr Cap Class	Nonirr Cap Class	Prime Farmland	Hydro-logic Group	Range site name	Windbreak suitability group	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
								K	Kf	T		
3512:NARON------	50	3e-	3e	All areas are prime farmland	B	Sandy (pe21-28)	3	.20	.20	5	3	86
3540:CARWILE----	100	N/A	2w	Not prime farmland	D	Sandy (pe21-28)	3	.24	.24	5	3	86
3540:SOLVAY-----	90	N/A	2e	Not prime farmland	D	Subirrigated (pe21-28)	3	.17	.17	5	3	86
3640:TIVOLI-----	100	N/A	7e	Not prime farmland	A	Choppy Sands (pe21-28)	1	.17	.17	5	1	250
3640:TIVIN------	95	N/A	6e	Not prime farmland	A	Choppy Sands (pe21-28)	1	.15	.15	5	1	220
An:ALBION-------	100	N/A	3e	Prime farmland if irrigated	B	Sandy (pe20-25)	3	.20	.20	4	3	86
As:ALBION-------	65	N/A	6e	Not prime farmland	B	Sandy (pe20-25)	3	.20	.20	4	3	86
As:SHELLABARGER-	35	N/A	6e	Not prime farmland	B	Sandy (pe20-25)	3	.20	.20	5	3	86
At:ATTICA-------	100	N/A	2e	Not prime farmland	B	Sandy (pe21-28)	2	.17	.17	5	2	134
Ax:ATTICA-------	60	N/A	2e	Not prime farmland	B	Sandy (pe21-28)	2	.17	.17	5	2	134
Ax:CARWILE------	40	N/A	2w	Not prime farmland	D	Sandy (pe21-28)	3	.24	.24	5	3	86
BOP:BORROW PITS-	100	N/A	N/A	Not prime farmland		Unspecified		---	---	-	---	---
Ca:CANADIAN-----	100	N/A	2e	All areas are prime farmland	B	Sandy Terrace (pe20-25)	3	.20	.20	5	3	86
Cc:CARWILE------	100	N/A	2w	Not prime farmland	D	Sandy (pe21-28)	3	.24	.24	5	3	86
Ce:CASE---------	100	N/A	4e	All areas are prime farmland	B	Limy Upland (pe20-25)	5	.32	.32	5	4L	86
Cf:CASE---------	100	N/A	6e	Not prime farmland	B	Limy Upland (pe20-25)	5	.32	.32	5	4L	86
Cg:CASE---------	65	N/A	6e	Not prime farmland	B	Limy Upland (pe20-25)	5	.32	.32	5	4L	86
Cg:CANLON-------	35	N/A	6s	Not prime farmland	D	Shallow Limy (pe20-25)	5	.32	.32	1	4L	86
Ck:CLARK--------	100	N/A	3e	All areas are prime farmland	B	Limy Upland (pe20-25)	5	.28	.28	5	4L	86
Cm:CLARK--------	100	N/A	4e	All areas are prime farmland	B	Limy Upland (pe20-25)	5	.28	.28	5	4L	86

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Field Office Thunderbook: Soils Properties for Conservation Planning--Continued

Map symbol and soil name	Percent	Irr Cap Class	Nonirr Cap Class	Prime Farmland	Hydro-logic Group	Range site name	Windbreak suitability group	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
								K	Kf	T		
Co:COLY---------	100	4e-	4e	Not prime farmland	B	Limy Upland (pe20-25)	5	.43	.43	5	4L	86
Cp:COLY---------	100	N/A	7e	Not prime farmland	B	Loess Breaks (pe20-20)	5	.43	.43	5	4L	86
Ct:COLY---------	70	N/A	6e	Not prime farmland	B	Limy Upland (pe20-25)	5	.43	.43	5	4L	86
Ct:TOBIN--------	30	N/A	5w	Not prime farmland	B	Loamy Lowland (pe20-25)	7	.32	.32	5	6	48
Da:DALE---------	100	N/A	2e	All areas are prime farmland	B	Loamy Terrace (pe20-25)	6	.37	.37	5	5	56
Fa:FARNUM-------	100	1-	2c	All areas are prime farmland	B	Loamy Upland (pe21-28)	7	.28	.28	5	6	48
Fb:FARNUM-------	100	2e-	2e	All areas are prime farmland	B	Loamy Upland (pe21-28)	7	.28	.28	5	6	48
Ha:HARNEY-------	100	1-	2c	All areas are prime farmland	B	Loamy Upland (pe20-25)	7	.32	.32	5	6	48
Hb:HARNEY-------	100	2e-	2e	All areas are prime farmland	B	Loamy Upland (pe20-25)	7	.32	.32	5	6	48
He:HEDVILLE-----	70	N/A	7s	Not prime farmland	D	Shallow Sandstone (pe20-25)	3	.20	.20	1	3	86
He:ROCK OUTCROP-	30	N/A	8	Not prime farmland	D	Unspecified		---	---	-	---	---
Ho:HOLDREGE-----	100	1-	2c	All areas are prime farmland	B	Loamy Upland (pe20-25)	7	.32	.32	5	6	48
Hp:HOLDREGE-----	100	2e-	2e	All areas are prime farmland	B	Loamy Upland (pe20-25)	7	.32	.32	5	6	48
Kr:KRIER--------	100	N/A	6s	Not prime farmland	D	Saline Subirrigated (pe20-25)	3	.24	.24	3	3	86
Lh:LANCASTER----	65	N/A	6e	Not prime farmland	B	Loamy Upland (pe20-25)	7	.28	.32	3	6	48
Lh:HEDVILLE-----	35	N/A	7s	Not prime farmland	D	Shallow Sandstone (pe20-25)	3	.20	.20	2	3	86
Ln:LINCOLN------	100	N/A	6w	Not prime farmland	A	Sandy Lowland (pe20-25)	3	.20	.20	5	3	86
M-W:MISCELLANEOUS WATER----------	100	N/A	N/A	Not prime farmland		Unspecified		---	---	-	---	---

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Field Office Thunderbook: Soils Properties for Conservation Planning--Continued

Map symbol and soil name	Percent	Irr Cap Class	Nonirr Cap Class	Prime Farmland	Hydro-logic Group	Range site name	Windbreak suitability group	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
								K	Kf	T		
Na:NARON--------	100	1-	2e	All areas are prime farmland	B	Sandy (pe21-28)	3	.20	.20	5	3	86
Nb:NARON--------	100	2e-	3e	All areas are prime farmland	B	Sandy (pe21-28)	3	.20	.20	5	3	86
Ne:NESS---------	100	N/A	6w	Not prime farmland	D	Lakebed (pe20-25)	4	.28	.28	5	4	86
Nw:NEW CAMBRIA--	100	2s-	2s	All areas are prime farmland	C	Clay Terrace (pe20-25)	4	.28	.28	5	4	86
Oe:OWENS--------	100	N/A	6e	Not prime farmland	D	Blue Shale (pe20-25)	4	.32	.32	2	4	86
Pe:PLEVNA-------	100	N/A	5w	Not prime farmland	D	Subirrigated (pe20-25)	6	.28	.28	5	5	56
Pr:PRATT--------	100	3e-	3e	Not prime farmland	A	Sands (pe21-28)	2	.17	.17	5	2	134
Ps:PRATT--------	100	3e-	4e	Not prime farmland	A	Sands (pe21-28)	2	.17	.17	5	2	134
Pt:PRATT--------	60	N/A	6e	Not prime farmland	A	Sands (pe21-28)	2	.17	.17	5	2	134
Pt:TIVOLI-------	40	N/A	7e	Not prime farmland	A	Sands (pe21-28)	2	.17	.17	5	2	134
Qw:QUINLAN------	55	N/A	6e	Not prime farmland	C	Shallow Prairie (pe20-25)	5	.37	.37	2	4L	86
Qw:WOODWARD-----	45	N/A	6e	Not prime farmland	B	Loamy Upland (pe20-25)	5	.37	.37	3	4L	86
SAP:SAND PIT----	100	N/A	N/A	Not prime farmland		Unspecified		---	---	-	---	---
Sh:SHELLABARGER-	100	N/A	3e	All areas are prime farmland	B	Sandy (pe20-25)	7	.28	.28	5	6	48
Th:TIVOLI-------	100	N/A	7e	Not prime farmland	A	Choppy Sands (pe21-28)	1	.17	.17	5	1	250
To:TOBIN--------	100	N/A	5w	Not prime farmland	B	Loamy Lowland (pe20-25)	7	.32	.32	5	6	48
Ts:TOBIN--------	100	N/A	2w	All areas are prime farmland	B	Loamy Lowland (pe20-25)	7	.32	.32	5	6	48
Uc:ULY----------	100	3e-	3e	All areas are prime farmland	B	Loamy Upland (pe20-25)	7	.32	.32	5	6	48
W:WATER---------	100	N/A	N/A	Not prime farmland		Unspecified		---	---	-	---	0

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Field Office Thunderbook: Soils Properties for Conservation Planning--Continued

Map symbol and soil name	Percent	Irr Cap Class	Nonirr Cap Class	Prime Farmland	Hydro-logic Group	Range site name	Windbreak suitability group	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
								K	Kf	T		
Wa:WALDECK------	100	N/A	3w	All areas are prime farmland	C	Subirrigated (pe20-25)	6	.28	.28	4	5	56

RANGELAND PRODUCTIVITY
Kiowa County, Kansas

Use and Explanation of Rangeland, Grazed Forest Land, Native Pastureland Interpretations

Information in this subsection can be used to plan the use and management of soils for rangeland, grazed forest land, and native pasture. Different kinds of soils vary in their capacity to produce native grasses and other plants suitable for grazing. Information in this subsection provides groupings of similar soils and estimates of potential forage production, which can be used to determine livestock stocking rates.

Rangeland. Range is land on which the native vegetation (climax or natural potential plant community) is predominantly grasses, grasslike plants, forbs, and shrubs suitable for grazing and browsing. Range includes natural grasslands, savannas, many wetlands, some deserts, tundra, and certain shrub and forb communities. Rangeland receives no regular or frequent cultural treatment. The composition and production of the plant community are determined by soil, climate, topography, overstory canopy, and grazing management.

Grazed Forest Land. Includes land on which the understory includes, as an integral part of the forest plant community, plants that can be grazed without significantly impairing other forest values.

Native Pasture. Includes land on which the native vegetation (climax or natural potential plant community) is forest but which is used and managed primarily for production of native plants for forage. Native pasture includes cut-over forest land and forest land cleared and now managed for native or naturalized forage plants.

Rangeland

In areas that have similar climate and topography, differences in the kind and amount of vegetation produced on rangeland are closely related to the kind of soil. Effective management based on the relationship between the soils and vegetation and water.

The Rangeland, Grazed Forest land, Native Pastureland Interpretations shows, for each soil that supports rangeland vegetation, the ecological site and the potential annual production of vegetation in favorable, normal, unfavorable years. An explanation of the column headings in this table follows.

An ecological site is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time throughout the soil development process; a characteristic hydrology, particularly infiltration and runoff, that has developed over time; and a characteristic plant community (kind and amount of vegetation). The hydrology of a site is influenced by development of the soil and plant community. The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in total production. Descriptions of ecological sites are provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service.

Total dry-weight production is the amount of vegetation that can be expected to grow annually on well managed rangeland that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, average, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture. Yields are adjusted to a common percent of air-dry moisture content.

Range management requires a knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range similarity index and rangeland trend. Range similarity index is determined by comparing the present plant community with the potential natural plant community on a particular rangeland ecological site. The more closely the existing community resembles the potential community, the higher the range similarity index. Rangeland trend is defined as the direction of change in an existing plant community relative to the potential natural plant community. Further information about the range similarity index and rangeland trend is available in chapter 4 of the National Range and Pasture Handbook, which is available in local offices of the Natural Resources Conservation Service. The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, control of undesirable brush species, conservation of water, and control of erosion. Sometimes, however, an area with a range similarity index somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

RANGELAND PRODUCTIVITY--Continued
Kiowa County, Kansas

(Only the soils that support rangeland vegetation suitable for grazing are rated.) Refer to range site description to determine the percentage allowable of grasses, forbs, and shrubs for the range ecological site.

Map symbol and soil name	Ecological site	Total dry-weight production		
		Favorable year	Average year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
007CF:				
Clairemont	Loamy Lowland (pe20-25)	3,400	2,600	1,800
025AB:				
Albion	Sandy (pe20-25)	4,000	3,000	2,000
Shellabarger	Sandy (pe20-25)	4,500	3,200	2,000
025PG:				
Penden	Limy Upland (pe20-25)	4,000	2,500	1,000
025SH:				
Shellabarger	Sandy (pe20-25)	4,500	3,200	2,000
033AC:				
Abilene	Loamy Upland (pe20-25)	2,500	2,000	1,300
033CK:				
Case	Limy Upland (pe20-25)	5,000	4,000	3,000
033CS:				
Clark	Limy Upland (pe20-25)	5,000	4,000	3,000
033CT:				
Clark	Limy Upland (pe20-25)	5,000	4,000	3,000
033ED:				
Elandco	Loamy Lowland (pe20-25)	6,500	5,000	3,500
033EF:				
Elandco	Loamy Lowland (pe20-25)	6,500	5,000	3,500
033KC:				
Kanza	---	---	---	---
033LN:				
Lincoln	Sandy Lowland (pe20-25)	3,000	2,300	1,800
033QR:				
Quinlan	Shallow Prairie (pe20-25)	2,500	1,800	1,300
Woodward	Loamy Upland (pe20-25)	4,000	2,800	2,000
033SH:				
Shellabarger	Sandy (pe20-25)	4,500	3,200	2,000
033SM:				
Shellabarger	Sandy (pe20-25)	4,500	3,200	2,000
047PA:				
Platte	Subirrigated (pe21-28)	5,000	4,600	4,200
047WA:				
Waldeck	Subirrigated (pe21-28)	9,000	8,000	7,000
057HD:				
Holdrege	Loamy Upland (pe20-26)	3,500	2,500	1,800
057PR:				
Pratt	Sands (pe20-26)	3,500	3,000	2,000
057PT:				
Pratt	Sands (pe20-26)	3,500	3,000	2,000
Tivoli	Sands (pe20-26)	3,500	3,000	2,000
057TV:				
Tivoli	Choppy Sands (pe20-26)	2,500	1,800	1,300
151BC:				
Blanket	Loamy Upland (pe21-28)	6,500	5,000	3,000
151BH:				
Blanket	Loamy Upland (pe21-28)	6,500	5,000	3,000
151FE:				
Farnum	Sandy (pe21-28)	5,000	3,500	2,500
151NM:				
Naron	Sandy (pe21-28)	5,000	3,500	2,000
151SE:				
Shellabarger	Sandy (pe21-28)	4,500	3,200	2,000
1324:				
Carway	Subirrigated (pe21-28)	9,500	8,500	7,500
Carbika	Subirrigated (pe21-28)	9,500	8,500	7,500
1725:				
Farnum	Loamy Upland (pe21-28)	5,500	4,000	2,500
Funmar	Loamy Upland (pe21-28)	5,500	4,000	2,500
1726:				
Farnum	Loamy Upland (pe21-28)	5,500	4,000	2,500
Funmar	Loamy Upland (pe21-28)	5,500	4,000	2,500
1985:				
Hayes	Sandy (pe21-28)	4,000	3,000	2,000
1986:				
Hayes	Sandy (pe21-28)	4,000	3,000	2,000
Solvay	Subirrigated (pe21-28)	9,500	8,500	7,500
1988:				
Hayes	Sandy (pe21-28)	4,000	3,000	2,000
2556:				
Langdon	Choppy Sands (pe21-28)	3,000	2,150	1,550
3512:				
Saltcreek	Sandy (pe21-28)	4,000	3,000	2,000
Naron	Sandy (pe21-28)	4,000	3,000	2,000
3540:				
Solvay	Subirrigated (pe21-28)	9,500	8,500	7,500
3640:				
Tivin	Choppy Sands (pe21-28)	3,000	2,150	1,550
An:				
Albion	Sandy (pe20-25)	4,000	3,000	2,000
As:				
Albion	Sandy (pe20-25)	4,000	3,000	2,000
Shellabarger	Sandy (pe20-25)	4,500	3,200	2,000

RANGELAND PRODUCTIVITY--Continued
Kiowa County, Kansas

(Only the soils that support rangeland vegetation suitable for grazing are rated.) Refer to range site description to determine the percentage allowable of grasses, forbs, and shrubs for the range ecological site.

Map symbol and soil name	Ecological site	Total dry-weight production		
		Favorable year	Average year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
At:				
Attica	Sandy (pe21-28)	4,500	3,000	2,000
Ax:				
Attica	Sandy (pe21-28)	4,500	3,000	2,000
Carwile	Sandy (pe21-28)	5,000	3,800	3,000
BOP:				
Borrow Pits	---	---	---	---
Ca:				
Canadian	Sandy Terrace (pe20-25)	8,500	6,100	4,500
Cc:				
Carwile	Sandy (pe21-28)	5,000	3,800	3,000
Ce:				
Case	Limy Upland (pe20-25)	5,000	4,000	3,000
Cf:				
Case	Limy Upland (pe20-25)	5,000	4,000	3,000
Cg:				
Case	Limy Upland (pe20-25)	5,000	4,000	3,000
Canlon	Shallow Limy (pe20-25)	2,400	1,600	900
Ck:				
Clark	Limy Upland (pe20-25)	5,000	4,000	3,000
Cm:				
Clark	Limy Upland (pe20-25)	5,000	4,000	3,000
Co:				
Coly	Limy Upland (pe20-25)	4,000	3,600	3,200
Cp:				
Coly	Loess Breaks (pe20-20)	3,500	3,300	3,000
Ct:				
Coly	Limy Upland (pe20-25)	4,000	3,600	3,200
Tobin	Loamy Lowland (pe20-25)	6,000	5,000	4,000
Da:				
Dale	Loamy Terrace (pe20-25)	8,500	6,100	4,500
Fa:				
Farnum	Loamy Upland (pe21-28)	5,500	4,000	2,500
Fb:				
Farnum	Loamy Upland (pe21-28)	5,500	4,000	2,500
Ha:				
Harney	Loamy Upland (pe20-25)	5,000	3,500	2,000
Hb:				
Harney	Loamy Upland (pe20-25)	5,000	3,500	2,000
He:				
Hedville	Shallow Sandstone (pe20-25)	4,000	3,000	2,000
Rock Outcrop	---	---	---	---
Ho:				
Holdrege	Loamy Upland (pe20-25)	4,000	3,600	3,300
Hp:				
Holdrege	Loamy Upland (pe20-25)	4,000	3,600	3,300
Kr:				
Krier	Saline Subirrigated (pe20-25)	6,500	5,500	4,000
Lh:				
Lancaster	Loamy Upland (pe20-25)	5,000	3,500	2,000
Hedville	Shallow Sandstone (pe20-25)	4,000	3,000	2,000
Ln:				
Lincoln	Sandy Lowland (pe20-25)	3,000	2,300	1,800
M-W:				
Miscellaneous Water	---	---	---	---
Na:				
Naron	Sandy (pe21-28)	4,500	3,000	2,000
Nb:				
Naron	Sandy (pe21-28)	4,500	3,000	2,000
Ne:				
Ness	Lakebed (pe20-25)	2,000	1,500	500
Nw:				
New Cambria	Clay Terrace (pe20-25)	5,000	4,000	2,500
Oe:				
Owens	Blue Shale (pe20-25)	3,000	2,000	1,500
Pe:				
Plevna	Subirrigated (pe20-25)	9,000	8,000	7,000
Pr:				
Pratt	Sands (pe21-28)	4,500	3,500	2,500
Ps:				
Pratt	Sands (pe21-28)	4,500	3,500	2,500
Pt:				
Pratt	Sands (pe21-28)	4,500	3,500	2,500
Tivoli	Sands (pe21-28)	2,000	1,400	1,000
Qw:				
Quinlan	Shallow Prairie (pe20-25)	2,500	1,800	1,300
Woodward	Loamy Upland (pe20-25)	4,000	2,800	2,000
SAP:				
Sand Pit	---	---	---	---
Sh:				
Shellabarger	Sandy (pe20-25)	4,500	3,200	2,000
Th:				
Tivoli	Choppy Sands (pe21-28)	2,000	1,400	1,000
To:				
Tobin	Loamy Lowland (pe20-25)	6,000	5,000	4,000

RANGELAND PRODUCTIVITY--Continued
Kiowa County, Kansas

(Only the soils that support rangeland vegetation suitable for grazing are rated.) Refer to range site description to determine the percentage allowable of grasses, forbs, and shrubs for the range ecological site.

Map symbol and soil name	Ecological site	Total dry-weight production		
		Favorable year	Average year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
Ts:				
Tobin	Loamy Lowland (pe20-25)	6,000	5,000	4,000
Uc:				
Uly	Loamy Upland (pe20-25)	3,700	3,200	2,700
W:				
Water	---	---	---	---
Wa:				
Waldeck	Subirrigated (pe20-25)	9,000	8,000	7,000

BUILDING SITE DEVELOPMENT
Kiowa County, Kansas

Building Site Development

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. The following tables show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

The ratings in the tables are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. Not limited indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. Slightly limited indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. Somewhat limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

BUILDING SITE DEVELOPMENT--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
007CF:							
Clairemont	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
025AB:							
Albion	60	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Slope	0.04	Slope	1.00
Shellabarger	40	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Slope	0.04	Slope	1.00
025PG:							
Penden	100	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.37	Slope	0.37	Shrink-swell	0.50
025SH:							
Shellabarger	100	Not limited		Not limited		Somewhat limited	
						Slope	0.00
033AC:							
Abilene	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
033CK:							
Case	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
						Slope	0.12
033CS:							
Clark	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
033CT:							
Clark	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
						Slope	0.12
033ED:							
Elandco	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
033EF:							
Elandco	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
033KC:							
Kanza	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	0.98	Depth to saturated zone	1.00	Depth to saturated zone	0.98
033LN:							
Lincoln	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Depth to saturated zone	0.03		
033QR:							
Quinlan	55	Somewhat limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
		Slope	0.37	Slope	0.37	Slope	1.00
Woodward	45	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Depth to soft bedrock	0.46	Slope	1.00
				Slope	0.37		
033SH:							
Shellabarger	100	Not limited		Not limited		Not limited	
033SM:							
Shellabarger	100	Not limited		Not limited		Somewhat limited	
						Slope	0.12
047PA:							
Platte	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	0.98	Depth to saturated zone	1.00	Depth to saturated zone	0.98
047WA:							
Waldeck	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Depth to saturated zone	0.95		
057HD:							
Holdrege	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
057PR:							
Pratt	100	Not limited		Not limited		Somewhat limited	
						Slope	0.86

BUILDING SITE DEVELOPMENT--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
057PT:							
Pratt	60	Somewhat limited Slope	0.16	Somewhat limited Slope	0.16	Very limited Slope	1.00
Tivoli	40	Somewhat limited Slope	0.16	Somewhat limited Slope	0.16	Very limited Slope	1.00
057TV:							
Tivoli	100	Somewhat limited Slope	0.84	Somewhat limited Slope	0.84	Very limited Slope	1.00
151BC:							
Blanket	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
151BH:							
Blanket	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
151FE:							
Farnum	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
151NM:							
Naron	100	Not limited		Not limited		Not limited	
151SE:							
Shellabarger	100	Not limited		Not limited		Not limited	
1324:							
Carway	50	Very limited Ponding Depth to saturated zone	1.00 1.00	Very limited Ponding Depth to saturated zone Shrink-swell	1.00 1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00
Carbika	30	Very limited Ponding Depth to saturated zone	1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00
1725:							
Farnum	40	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
Funmar	40	Not limited		Somewhat limited Shrink-swell	0.50	Not limited	
1726:							
Farnum	40	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
Funmar	40	Not limited		Somewhat limited Shrink-swell	0.50	Not limited	
1985:							
Hayes	60	Not limited		Very limited Shrink-swell	1.00	Not limited	
1986:							
Hayes	55	Not limited		Very limited Shrink-swell	1.00	Not limited	
Solvay	20	Not limited		Somewhat limited Depth to saturated zone	0.95	Not limited	
1988:							
Hayes	70	Not limited		Very limited Shrink-swell	1.00	Somewhat limited Slope	0.48
2556:							
Langdon	50	Somewhat limited Slope	0.00	Somewhat limited Slope	0.00	Very limited Slope	1.00
3512:							
Saltcreek	50	Not limited		Very limited Shrink-swell	1.00	Not limited	
Naron	50	Not limited		Not limited		Not limited	
3540:							
Solvay	90	Not limited		Somewhat limited Depth to saturated zone	0.95	Not limited	
3640:							
Tivin	95	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
An:							
Albion	100	Not limited		Not limited		Not limited	
As:							
Albion	65	Somewhat limited Slope	0.16	Somewhat limited Slope	0.16	Very limited Slope	1.00
Shellabarger	35	Somewhat limited Slope	0.16	Somewhat limited Slope	0.16	Very limited Slope	1.00
At:							
Attica	100	Not limited		Not limited		Not limited	

BUILDING SITE DEVELOPMENT--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ax:							
Attica	60	Not limited		Not limited		Not limited	
Carwile	40	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
BOP:							
Borrow Pits	100	Not rated		Not rated		Not rated	
Ca:							
Canadian	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
Cc:							
Carwile	100	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
Ce:							
Case	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
						Slope	0.12
Cf:							
Case	100	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.37	Slope	0.37	Shrink-swell	0.50
Cg:							
Case	65	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.37	Slope	0.37	Shrink-swell	0.50
Canlon	35	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.96	Slope	0.96	Slope	1.00
Ck:							
Clark	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Cm:							
Clark	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
						Slope	0.12
Co:							
Coly	100	Not limited		Not limited		Somewhat limited	
						Slope	0.86
Cp:							
Coly	100	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Ct:							
Coly	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Tobin	30	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Shrink-swell	0.50		
Da:							
Dale	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Fa:							
Farnum	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Fb:							
Farnum	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Ha:							
Harney	100	Somewhat limited		Not limited		Somewhat limited	
		Shrink-swell	0.50			Shrink-swell	0.50
Hb:							
Harney	100	Somewhat limited		Not limited		Somewhat limited	
		Shrink-swell	0.50			Shrink-swell	0.50
He:							
Hedville	70	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Depth to hard bedrock	1.00
Rock Outcrop	30	Not rated		Not rated		Not rated	

BUILDING SITE DEVELOPMENT--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ho:							
Holdrege	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Hp:							
Holdrege	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Kr:							
Krier	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	0.39	Depth to saturated zone	1.00	Depth to saturated zone	0.39
Lh:							
Lancaster	65	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.00	Depth to soft bedrock	0.95	Slope	1.00
				Slope	0.00		
Hedville	35	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.63	Slope	0.63	Slope	1.00
Ln:							
Lincoln	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Depth to saturated zone	0.03		
M-W:							
Miscellaneous Water-	100	Not rated		Not rated		Not rated	
Na:							
Naron	100	Not limited		Not limited		Not limited	
Nb:							
Naron	100	Not limited		Not limited		Not limited	
Ne:							
Ness	100	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
Nw:							
New Cambria	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
Oe:							
Owens	100	Very limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Shrink-swell	1.00	Depth to soft bedrock	1.00
		Shrink-swell	1.00	Depth to soft bedrock	1.00	Shrink-swell	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
Pe:							
Plevna	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Pr:							
Pratt	100	Not limited		Not limited		Not limited	
Ps:							
Pratt	100	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.00	Slope	0.00	Slope	1.00
Pt:							
Pratt	60	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.16	Slope	0.16	Slope	1.00
Tivoli	40	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.16	Slope	0.16	Slope	1.00
Qw:							
Quinlan	55	Very limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
Woodward	45	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.84	Slope	0.84	Slope	1.00
				Depth to soft bedrock	0.71		
SAP:							
Sand Pit	100	Not rated		Not rated		Not rated	

BUILDING SITE DEVELOPMENT--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Sh:							
Shellabarger	100	Not limited		Not limited		Somewhat limited Slope	0.00
Th:							
Tivoli	100	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
To:							
Tobin	100	Very limited Flooding	1.00	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding	1.00
Ts:							
Tobin	100	Very limited Flooding	1.00	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding	1.00
Uc:							
Uly	100	Not limited		Not limited		Somewhat limited Slope	0.12
W:							
Water	100	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
Wa:							
Waldeck	100	Very limited Flooding	1.00	Very limited Flooding Depth to saturated zone	1.00 0.95	Very limited Flooding	1.00

BUILDING SITE DEVELOPMENT--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
007CF:							
Clairemont	100	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.80	Flooding	1.00
				Cutbanks cave	0.10		
025AB:							
Albion	60	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.04	Cutbanks cave	1.00	Slope	0.04
				Slope	0.04		
Shellabarger	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.04	Cutbanks cave	0.10	Slope	0.04
				Slope	0.04		
025PG:							
Penden	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Slope	0.37	Slope	0.37
		Slope	0.37	Cutbanks cave	0.10		
025SH:							
Shellabarger	100	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
033AC:							
Abilene	100	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
033CK:							
Case	100	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
033CS:							
Clark	100	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
033CT:							
Clark	100	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
033ED:							
Elandco	100	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Flooding	0.60	Flooding	0.60
		Shrink-swell	0.50	Cutbanks cave	0.10		
033EF:							
Elandco	100	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.80	Flooding	1.00
		Shrink-swell	0.50	Cutbanks cave	0.10		
033KC:							
Kanza	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Cutbanks cave	1.00	Flooding	1.00
		Depth to saturated zone	0.75	Depth to saturated zone	1.00	Depth to saturated zone	0.75
				Flooding	0.80	Droughty	0.03
033LN:							
Lincoln	100	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Cutbanks cave	1.00	Droughty	0.92
				Flooding	0.60	Flooding	0.60
				Depth to saturated zone	0.03		
033QR:							
Quinlan	55	Somewhat limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Slope	0.37	Slope	0.37	Droughty	0.74
				Cutbanks cave	0.10	Slope	0.37
Woodward	45	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.37	Depth to soft bedrock	0.46	Depth to bedrock	0.46
				Slope	0.37	Slope	0.37
				Cutbanks cave	0.10		
033SH:							
Shellabarger	100	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
033SM:							
Shellabarger	100	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
047PA:							
Platte	100	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
		Depth to saturated zone	0.75	Cutbanks cave	1.00	Flooding	0.60
				Flooding	0.60	Droughty	0.57
				Depth to dense layer	0.50		

BUILDING SITE DEVELOPMENT--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
047WA:							
Waldeck	100	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
				Depth to saturated zone	0.95		
				Flooding	0.60		
057HD:							
Holdrege	100	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
057PR:							
Pratt	100	Not limited		Very limited		Not limited	
				Cutbanks cave	1.00		
057PT:							
Pratt	60	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.16	Cutbanks cave	1.00	Slope	0.16
				Slope	0.16		
Tivoli	40	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.16	Cutbanks cave	1.00	Droughty	0.48
				Slope	0.16	Slope	0.16
057TV:							
Tivoli	100	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.84	Cutbanks cave	1.00	Slope	0.84
				Slope	0.84	Droughty	0.64
151BC:							
Blanket	100	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
				Too clayey	0.03		
151BH:							
Blanket	100	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
				Too clayey	0.03		
151FE:							
Farnum	100	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
151NM:							
Naron	100	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
151SE:							
Shellabarger	100	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
1324:							
Carway	50	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
				Cutbanks cave	0.10		
Carbika	30	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
				Cutbanks cave	0.10		
				Too clayey	0.00		
1725:							
Farnum	40	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
Funmar	40	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
1726:							
Farnum	40	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
Funmar	40	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
1985:							
Hayes	60	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
				Too clayey	0.02		
1986:							
Hayes	55	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
				Too clayey	0.02		
Solvay	20	Not limited		Very limited		Not limited	
				Cutbanks cave	1.00		
				Depth to saturated zone	0.95		

BUILDING SITE DEVELOPMENT--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1988:							
Hayes	70	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
				Too clayey	0.02		
2556:							
Langdon	50	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.00	Cutbanks cave	1.00	Droughty	0.97
				Slope	0.00	Slope	0.00
3512:							
Saltcreek	50	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
				Too clayey	0.00		
Naron	50	Not limited		Very limited		Not limited	
				Cutbanks cave	1.00		
3540:							
Solvay	90	Not limited		Very limited		Not limited	
				Cutbanks cave	1.00		
				Depth to saturated zone	0.95		
3640:							
Tivin	95	Very limited		Very limited		Very limited	
		Slope	1.00	Cutbanks cave	1.00	Slope	1.00
				Slope	1.00	Droughty	0.98
An:							
Albion	100	Not limited		Very limited		Not limited	
				Cutbanks cave	1.00		
As:							
Albion	65	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.16	Cutbanks cave	1.00	Slope	0.16
				Slope	0.16		
Shellabarger	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.16	Slope	0.16	Slope	0.16
				Cutbanks cave	0.10		
At:							
Attica	100	Somewhat limited		Somewhat limited		Not limited	
		Frost action	0.50	Cutbanks cave	0.10		
Ax:							
Attica	60	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
Carwile	40	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	1.00	Too clayey	0.28		
		Low strength	1.00	Cutbanks cave	0.10		
BOP:							
Borrow Pits	100	Not rated		Not rated		Not rated	
Ca:							
Canadian	100	Somewhat limited		Somewhat limited		Not limited	
		Flooding	0.40	Cutbanks cave	0.10		
Cc:							
Carwile	100	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	1.00	Too clayey	0.28		
				Cutbanks cave	0.10		
Ce:							
Case	100	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
Cf:							
Case	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Slope	0.37	Slope	0.37
		Slope	0.37	Cutbanks cave	0.10		
Cg:							
Case	65	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Slope	0.37	Slope	0.37
		Slope	0.37	Cutbanks cave	0.10		
Canlon	35	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	0.96	Slope	0.96	Slope	0.96
				Cutbanks cave	0.10	Droughty	0.70
Ck:							
Clark	100	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		

BUILDING SITE DEVELOPMENT--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Cm:							
Clark	100	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
Co:							
Coly	100	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
Cp:							
Coly	100	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10		
Ct:							
Coly	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10		
Tobin	30	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.80	Flooding	1.00
				Cutbanks cave	0.10		
Da:							
Dale	100	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Flooding	0.40				
Fa:							
Farnum	100	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
Fb:							
Farnum	100	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
Ha:							
Harney	100	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
Hb:							
Harney	100	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
He:							
Hedville	70	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10	Droughty	0.95
						Content of large stones	0.03
Rock Outcrop	30	Not rated		Not rated		Not rated	
Ho:							
Holdrege	100	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Frost action	0.50				
Hp:							
Holdrege	100	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Frost action	0.50				
Kr:							
Krier	100	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
		Depth to saturated zone	0.19	Depth to saturated zone	1.00	Droughty	0.35
				Flooding	0.60	Depth to saturated zone	0.19
						Salinity	0.13
Lh:							
Lancaster	65	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.00	Depth to soft bedrock	0.95	Depth to bedrock	0.95
				Cutbanks cave	0.10	Slope	0.00
				Slope	0.00		
Hedville	35	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	0.63	Slope	0.63	Droughty	0.95
				Cutbanks cave	0.10	Slope	0.63
						Content of large stones	0.03

BUILDING SITE DEVELOPMENT--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ln:							
Lincoln	100	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Cutbanks cave	1.00	Droughty	0.80
				Flooding	0.60	Flooding	0.60
				Depth to saturated zone	0.03		
M-W:							
Miscellaneous Water-	100	Not rated		Not rated		Not rated	
Na:							
Naron	100	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
Nb:							
Naron	100	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
Ne:							
Ness	100	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	1.00	Cutbanks cave	1.00	Too clayey	1.00
				Too clayey	0.50		
Nw:							
New Cambria	100	Very limited		Somewhat limited		Very limited	
		Shrink-swell	1.00	Too clayey	0.50	Too clayey	1.00
		Flooding	0.40	Cutbanks cave	0.10		
Oe:							
Owens	100	Very limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Shrink-swell	1.00	Slope	1.00	Droughty	1.00
		Slope	1.00	Too clayey	0.28	Too clayey	1.00
				Cutbanks cave	0.10	Slope	1.00
Pe:							
Plevna	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
				Flooding	0.80		
Pr:							
Pratt	100	Not limited		Very limited		Not limited	
				Cutbanks cave	1.00		
Ps:							
Pratt	100	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.00	Cutbanks cave	1.00	Slope	0.00
				Slope	0.00		
Pt:							
Pratt	60	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.16	Cutbanks cave	1.00	Slope	0.16
				Slope	0.16		
Tivoli	40	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.16	Cutbanks cave	1.00	Droughty	0.96
				Slope	0.16	Slope	0.16
Qw:							
Quinlan	55	Very limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10	Droughty	0.62
Woodward	45	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.84	Slope	0.84	Slope	0.84
				Depth to soft bedrock	0.71	Depth to bedrock	0.71
				Cutbanks cave	0.10		
SAP:							
Sand Pit	100	Not rated		Not rated		Not rated	
Sh:							
Shellabarger	100	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
Th:							
Tivoli	100	Very limited		Very limited		Very limited	
		Slope	1.00	Cutbanks cave	1.00	Slope	1.00
				Slope	1.00	Droughty	1.00

BUILDING SITE DEVELOPMENT--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
To:							
Tobin	100	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.80	Flooding	1.00
				Cutbanks cave	0.10		
Ts:							
Tobin	100	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Flooding	0.60	Flooding	0.60
		Frost action	0.50	Cutbanks cave	0.10		
Uc:							
Uly	100	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
W:							
Water	100	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Cutbanks cave	0.10		
Wa:							
Waldeck	100	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
				Depth to saturated zone	0.95		
				Flooding	0.60		

CONSTRUCTION MATERIALS
Kiowa County, Kansas

Construction Materials

The following tables give information about the soils as potential sources of gravel, sand, topsoil, reclamation material, and roadfill. Normal compaction, minor processing, and other standard construction practices are assumed.

The soils are rated good, fair, or poor as potential sources of topsoil, reclamation material, and roadfill. The features that limit the soils as sources of these materials are specified in the tables. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of topsoil, reclamation material, or roadfill. The lower the number, the greater the limitation.

The soils are rated as a probable or improbable source of sand and gravel. A rating of probable means that the source material is likely to be in or below the soil. The numerical ratings in these columns indicate the degree of probability. The number 0.00 indicates that the soil is an improbable source. A number between 0.00 and 1.00 indicates the degree to which the soil is a probable source of sand or gravel.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In these tables, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the lowest layer of the soil contains sand or gravel, the soil is rated as a probable source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink–swell potential).

CONSTRUCTION MATERIALS--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
007CF:					
Clairemont	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
025AB:					
Albion	60	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.09
		Bottom layer	0.00	Bottom layer	0.91
Shellabarger	40	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.05
		Thickest layer	0.00	Bottom layer	0.09
025PG:					
Penden	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
025SH:					
Shellabarger	100	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.05
		Thickest layer	0.00	Bottom layer	0.09
033AC:					
Abilene	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
033CK:					
Case	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
033CS:					
Clark	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
033CT:					
Clark	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
033ED:					
Elandco	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
033EF:					
Elandco	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
033KC:					
Kanza	100	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.57
		Thickest layer	0.00	Bottom layer	0.96
033LN:					
Lincoln	100	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.22
		Thickest layer	0.00	Thickest layer	0.56
033QR:					
Quinlan	55	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Woodward	45	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
033SH:					
Shellabarger	100	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.05
		Thickest layer	0.00	Bottom layer	0.09

CONSTRUCTION MATERIALS--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
033SM:					
Shellabarger	100	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.05
		Thickest layer	0.00	Bottom layer	0.09
047PA:					
Platte	100	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.97
047WA:					
Waldeck	100	Poor		Good	
		Bottom layer	0.00	Thickest layer	0.10
		Thickest layer	0.00		
057HD:					
Holdrege	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
057PR:					
Pratt	100	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.19
		Thickest layer	0.00	Thickest layer	0.51
057PT:					
Pratt	60	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.19
		Thickest layer	0.00	Thickest layer	0.51
Tivoli	40	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.57
		Thickest layer	0.00	Bottom layer	0.99
057TV:					
Tivoli	100	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.99
		Thickest layer	0.00	Thickest layer	0.99
151BC:					
Blanket	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
151BH:					
Blanket	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
151FE:					
Farnum	100	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.06
151NM:					
Naron	100	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.05
		Thickest layer	0.00	Bottom layer	0.08
151SE:					
Shellabarger	100	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.05
		Thickest layer	0.00	Bottom layer	0.09
1324:					
Carway	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Carbika	30	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
1725:					
Farnum	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

CONSTRUCTION MATERIALS--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
Funmar	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
1726:					
Farnum	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Funmar	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
1985:					
Hayes	60	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
1986:					
Hayes	55	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Solvay	20	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.07
		Thickest layer	0.00	Bottom layer	0.44
1988:					
Hayes	70	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
2556:					
Langdon	50	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.50
		Thickest layer	0.00	Thickest layer	0.50
3512:					
Saltcreek	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Naron	50	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.07
		Thickest layer	0.00	Bottom layer	0.55
3540:					
Solvay	90	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.07
		Thickest layer	0.00	Bottom layer	0.44
3640:					
Tivin	95	Poor		Good	
		Bottom layer	0.00		
		Thickest layer	0.00		
An:					
Albion	100	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.09
		Bottom layer	0.00	Bottom layer	0.91
As:					
Albion	65	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.09
		Bottom layer	0.00	Bottom layer	0.91
Shellabarger	35	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.05
		Thickest layer	0.00	Thickest layer	0.10
At:					
Attica	100	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.07
		Thickest layer	0.00	Thickest layer	0.09
Ax:					
Attica	60	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.07
		Thickest layer	0.00	Thickest layer	0.09

CONSTRUCTION MATERIALS--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
Carwile	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
BOP:					
Borrow Pits	100	Not rated		Not rated	
Ca:					
Canadian	100	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.07
		Thickest layer	0.00	Thickest layer	0.09
Cc:					
Carwile	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Ce:					
Case	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Cf:					
Case	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Cg:					
Case	65	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Canlon	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Ck:					
Clark	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Cm:					
Clark	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Co:					
Coly	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Cp:					
Coly	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Ct:					
Coly	70	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Tobin	30	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Da:					
Dale	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Fa:					
Farnum	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

CONSTRUCTION MATERIALS--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
Fb:					
Farnum	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Ha:					
Harney	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Hb:					
Harney	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
He:					
Hedville	70	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock Outcrop	30	Not rated		Not rated	
Ho:					
Holdrege	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Hp:					
Holdrege	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Kr:					
Krier	100	Poor		Good	
		Bottom layer	0.00	Thickest layer	0.08
		Thickest layer	0.00		
Lh:					
Lancaster	65	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Hedville	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Ln:					
Lincoln	100	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.09
		Thickest layer	0.00	Bottom layer	0.22
M-W:					
Miscellaneous Water	100	Not rated		Not rated	
Na:					
Naron	100	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.05
		Thickest layer	0.00	Bottom layer	0.08
Nb:					
Naron	100	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.05
		Thickest layer	0.00	Bottom layer	0.08
Ne:					
Ness	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Nw:					
New Cambria	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

CONSTRUCTION MATERIALS--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
Oe:					
Owens	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Pe:					
Plevna	100	Poor		Good	
		Bottom layer	0.00	Thickest layer	0.09
		Thickest layer	0.00	Bottom layer	0.99
Pr:					
Pratt	100	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.19
		Thickest layer	0.00	Thickest layer	0.44
Ps:					
Pratt	100	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.19
		Thickest layer	0.00	Thickest layer	0.44
Pt:					
Pratt	60	Poor		Good	
		Bottom layer	0.00	Thickest layer	0.57
		Thickest layer	0.00		
Tivoli	40	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.57
		Thickest layer	0.00	Bottom layer	0.99
Qw:					
Quinlan	55	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Woodward	45	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
SAP:					
Sand Pit	100	Not rated		Not rated	
Sh:					
Shellabarger	100	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.07
Th:					
Tivoli	100	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.99
		Thickest layer	0.00	Thickest layer	0.99
To:					
Tobin	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Ts:					
Tobin	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Uc:					
Uly	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
W:					
Water	100	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Wa:					
Waldeck	100	Poor		Good	
		Bottom layer	0.00	Thickest layer	0.09
		Thickest layer	0.00		

CONSTRUCTION MATERIALS--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
007CF:							
Clairemont	100	Poor		Good		Good	
		Low content of organic matter	0.00				
		Water erosion	0.90				
025AB:							
Albion	60	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Low content of organic matter	0.18			Rock fragments	0.00
		Too acid	0.95			Hard to reclaim	0.68
		Droughty	0.98			Slope	0.96
Shellabarger	40	Fair		Good		Fair	
		Too acid	0.84			Slope	0.96
		Low content of organic matter	0.88				
025PG:							
Penden	100	Fair		Fair		Fair	
		Low content of organic matter	0.18	Shrink-swell	0.87	Slope	0.63
		Carbonate content	0.80			Too Clayey	0.84
		Too clayey	0.95				
025SH:							
Shellabarger	100	Fair		Good		Good	
		Low content of organic matter	0.18				
		Too acid	0.84				
033AC:							
Abilene	100	Poor		Fair		Poor	
		Low content of organic matter	0.00	Shrink-swell	0.87	Too Clayey	0.00
		Too clayey	0.00				
		No water erosion limitation	0.99				
033CK:							
Case	100	Poor		Fair		Good	
		Low content of organic matter	0.00	Shrink-swell	0.87		
033CS:							
Clark	100	Poor		Fair		Fair	
		Low content of organic matter	0.00	Shrink-swell	0.87	Carbonate content	0.68
		Carbonate content	0.68				
033CT:							
Clark	100	Poor		Fair		Fair	
		Low content of organic matter	0.00	Shrink-swell	0.87	Carbonate content	0.68
		Carbonate content	0.68				
033ED:							
Elandco	100	Fair		Fair		Good	
		Water erosion	0.90	Shrink-swell	0.87		
033EF:							
Elandco	100	Fair		Fair		Good	
		Water erosion	0.90	Shrink-swell	0.87		
033KC:							
Kanza	100	Poor		Fair		Poor	
		Wind erosion	0.00	Depth to saturated zone	0.14	Too sandy	0.00
		Low content of organic matter	0.00			Depth to saturated zone	0.14
		Too sandy	0.00				
		Too acid	0.95				
		Droughty	0.98				

CONSTRUCTION MATERIALS--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
033LN:							
Lincoln	100	Poor		Good		Fair	
		Wind erosion	0.00			Too sandy	0.22
		Low content of organic matter	0.00				
		Droughty	0.04				
		Too sandy	0.22				
033QR:							
Quinlan	55	Poor		Poor		Poor	
		Depth to bedrock	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Droughty	0.00			Slope	0.63
		Low content of organic matter	0.50				
		No water erosion limitation	0.99				
Woodward	45	Fair		Poor		Fair	
		Depth to bedrock	0.54	Depth to bedrock	0.00	Depth to bedrock	0.54
		Droughty	0.85			Slope	0.63
		No water erosion limitation	0.99				
033SH:							
Shellabarger	100	Poor		Good		Good	
		Low content of organic matter	0.00				
		Too acid	0.84				
033SM:							
Shellabarger	100	Poor		Good		Good	
		Low content of organic matter	0.00				
		Too acid	0.84				
047PA:							
Platte	100	Poor		Fair		Poor	
		Too sandy	0.00	Depth to saturated zone	0.14	Hard to reclaim	0.00
		Droughty	0.07			Too sandy	0.00
		Low content of organic matter	0.08			Rock fragments	0.03
						Depth to saturated zone	0.14
						Hard to reclaim	0.98
047WA:							
Waldeck	100	Fair		Good		Good	
		Low content of organic matter	0.08				
057HD:							
Holdrege	100	Fair		Fair		Fair	
		Water erosion	0.90	Shrink-swell	0.89	Too Clayey	0.84
		Too clayey	0.95				
057PR:							
Pratt	100	Poor		Good		Poor	
		Wind erosion	0.00			Too sandy	0.00
		Too sandy	0.00				
		Low content of organic matter	0.12				
		Droughty	0.97				
057PT:							
Pratt	60	Poor		Good		Poor	
		Wind erosion	0.00			Too sandy	0.00
		Too sandy	0.00			Slope	0.84
		Low content of organic matter	0.12				
		Droughty	0.97				
Tivoli	40	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00			Slope	0.84
		Low content of organic matter	0.12				
		Droughty	0.50				

CONSTRUCTION MATERIALS--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
057TV:							
Tivoli	100	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00			Slope	0.16
		Low content of organic matter	0.12				
		Droughty	0.38				
151BC:							
Blanket	100	Poor		Fair		Poor	
		Low content of organic matter	0.00	Shrink-swell	0.87	Too Clayey	0.00
		Too clayey	0.00				
		Water erosion	0.90				
151BH:							
Blanket	100	Poor		Fair		Poor	
		Low content of organic matter	0.00	Shrink-swell	0.90	Too Clayey	0.00
		Too clayey	0.00				
		Water erosion	0.90				
151FE:							
Farnum	100	Poor		Fair		Good	
		Low content of organic matter	0.00	Shrink-swell	0.99		
151NM:							
Naron	100	Poor		Good		Good	
		Low content of organic matter	0.00				
151SE:							
Shellabarger	100	Poor		Good		Good	
		Low content of organic matter	0.00				
		Too acid	0.84				
1324:							
Carway	50	Fair		Poor		Poor	
		Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
		Too acid	0.95	Low strength	0.00		
		No water erosion limitation	0.99	Shrink-swell	0.89		
Carbika	30	Fair		Poor		Poor	
		Too clayey	0.74	Depth to saturated zone	0.00	Depth to saturated zone	0.00
		Low content of organic matter	0.88			Too Clayey	0.53
		Too acid	0.95				
		No water erosion limitation	0.99				
1725:							
Farnum	40	Fair		Poor		Good	
		Low content of organic matter	0.12	Low strength	0.00		
		Too acid	0.99	Shrink-swell	0.96		
Funmar	40	Fair		Poor		Good	
		Low content of organic matter	0.12	Low strength	0.00		
		No water erosion limitation	0.99				
1726:							
Farnum	40	Fair		Poor		Good	
		Low content of organic matter	0.12	Low strength	0.00		
		Too acid	0.99	Shrink-swell	0.96		
Funmar	40	Fair		Poor		Good	
		Low content of organic matter	0.12	Low strength	0.00		
		No water erosion limitation	0.99				

CONSTRUCTION MATERIALS--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1985:							
Hayes	60	Fair		Poor		Good	
		Low content of organic matter	0.12	Low strength	0.00		
		Too acid	0.97				
1986:							
Hayes	55	Poor		Poor		Good	
		Wind erosion	0.00	Low strength	0.00		
		Low content of organic matter	0.12				
		Too acid	0.97				
Solvay	20	Poor		Good		Good	
		Wind erosion	0.00				
		Low content of organic matter	0.04				
		Too acid	0.97				
1988:							
Hayes	70	Fair		Poor		Good	
		Low content of organic matter	0.12	Low strength	0.00		
		Too acid	0.97				
2556:							
Langdon	50	Poor		Good		Poor	
		Wind erosion	0.00			Too sandy	0.00
		Low content of organic matter	0.00			Too acid	0.99
		Too sandy	0.00				
		Droughty	0.38				
		Too acid	0.61				
3512:							
Saltcreek	50	Fair		Poor		Good	
		Too acid	0.12	Low strength	0.00		
		Low content of organic matter	0.12	Shrink-swell	0.95		
		No water erosion limitation	0.99				
Naron	50	Fair		Good		Good	
		Low content of organic matter	0.12				
3540:							
Solvay	90	Fair		Good		Good	
		Low content of organic matter	0.04				
		Too acid	0.97				
3640:							
Tivin	95	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00			Slope	0.00
		Low content of organic matter	0.00				
		Droughty	0.36				
		Too acid	0.99				
An:							
Albion	100	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Low content of organic matter	0.00			Rock fragments	0.00
		Too acid	0.95			Hard to reclaim	0.68
As:							
Albion	65	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Low content of organic matter	0.00			Rock fragments	0.00
		Too acid	0.95			Hard to reclaim	0.68
						Slope	0.84
Shellabarger	35	Poor		Good		Fair	
		Low content of organic matter	0.00			Slope	0.84
		Too acid	0.84				

CONSTRUCTION MATERIALS--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
At:							
Attica	100	Poor		Good		Good	
		Wind erosion	0.00				
		Low content of organic matter	0.18				
		Too acid	0.95				
Ax:							
Attica	60	Poor		Good		Good	
		Wind erosion	0.00				
		Low content of organic matter	0.18				
		Too acid	0.95				
Carwile	40	Poor		Poor		Poor	
		Too clayey	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
		Low content of organic matter	0.08	Shrink-swell	0.25	Too Clayey	0.00
		Too acid	0.97				
		No water erosion limitation	0.99				
BOP:							
Borrow Pits	100	Not rated		Not rated		Not rated	
Ca:							
Canadian	100	Poor		Good		Good	
		Low content of organic matter	0.00				
Cc:							
Carwile	100	Poor		Poor		Poor	
		Low content of organic matter	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
		Too clayey	0.00	Shrink-swell	0.25	Too Clayey	0.00
		Too acid	0.97				
		No water erosion limitation	0.99				
Ce:							
Case	100	Poor		Fair		Good	
		Low content of organic matter	0.00	Shrink-swell	0.87		
Cf:							
Case	100	Poor		Fair		Fair	
		Low content of organic matter	0.00	Shrink-swell	0.87	Slope	0.63
Cg:							
Case	65	Poor		Fair		Fair	
		Low content of organic matter	0.00	Shrink-swell	0.87	Slope	0.63
Canlon	35	Poor		Poor		Poor	
		Low content of organic matter	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00			Slope	0.04
		Droughty	0.00			Rock fragments	0.28
Ck:							
Clark	100	Poor		Fair		Fair	
		Low content of organic matter	0.00	Shrink-swell	0.87	Carbonate content	0.68
		Carbonate content	0.68				
Cm:							
Clark	100	Poor		Fair		Fair	
		Low content of organic matter	0.00	Shrink-swell	0.87	Carbonate content	0.68
		Carbonate content	0.68				
Co:							
Coly	100	Poor		Good		Good	
		Low content of organic matter	0.00				
		Water erosion	0.90				

CONSTRUCTION MATERIALS--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Cp:							
Coly	100	Poor		Poor		Poor	
		Low content of organic matter	0.00	Slope	0.00	Slope	0.00
		Water erosion	0.90				
Ct:							
Coly	70	Poor		Good		Poor	
		Low content of organic matter	0.00			Slope	0.00
		Water erosion	0.90				
Tobin	30	Fair		Fair		Good	
		Low content of organic matter	0.50	Shrink-swell	0.98		
		Water erosion	0.90				
Da:							
Dale	100	Poor		Fair		Good	
		Low content of organic matter	0.00	Shrink-swell	0.93		
		No water erosion limitation	0.99				
Fa:							
Farnum	100	Poor		Fair		Good	
		Low content of organic matter	0.00	Shrink-swell	0.93		
Fb:							
Farnum	100	Poor		Fair		Good	
		Low content of organic matter	0.00	Shrink-swell	0.95		
Ha:							
Harney	100	Poor		Good		Fair	
		Low content of organic matter	0.00			Too Clayey	0.02
		Too clayey	0.05				
		Water erosion	0.90				
Hb:							
Harney	100	Poor		Good		Fair	
		Low content of organic matter	0.00			Too Clayey	0.02
		Too clayey	0.05				
		Water erosion	0.90				
He:							
Hedville	70	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00	Slope	0.08	Slope	0.00
						Rock fragments	0.95
Rock Outcrop	30	Not rated		Not rated		Not rated	
Ho:							
Holdrege	100	Poor		Fair		Fair	
		Low content of organic matter	0.00	Shrink-swell	0.87	Too Clayey	0.48
		Water erosion	0.90				
		Too clayey	0.95				
Hp:							
Holdrege	100	Poor		Fair		Fair	
		Low content of organic matter	0.00	Shrink-swell	0.87	Too Clayey	0.48
		Water erosion	0.90				
		Too clayey	0.95				
Kr:							
Krier	100	Poor		Fair		Poor	
		Too sandy	0.00	Depth to saturated zone	0.53	Too sandy	0.00
		Low content of organic matter	0.00			Depth to saturated zone	0.53
		Droughty	0.33			Salinity	0.88
		Salinity	0.88				

CONSTRUCTION MATERIALS--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Lh:							
Lancaster	65	Fair		Poor		Fair	
		Depth to bedrock	0.05	Depth to bedrock	0.00	Depth to bedrock	0.05
		Droughty	0.40				
		Too acid	0.95				
Hedville	35	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00			Slope	0.37
						Rock fragments	0.95
Ln:							
Lincoln	100	Poor		Good		Fair	
		Low content of organic matter	0.00			Too sandy	0.22
		Droughty	0.10				
		Too sandy	0.22				
M-W:							
Miscellaneous Water-	100	Not rated		Not rated		Not rated	
Na:							
Naron	100	Poor		Good		Good	
		Low content of organic matter	0.00				
Nb:							
Naron	100	Poor		Good		Good	
		Low content of organic matter	0.00				
Ne:							
Ness	100	Poor		Poor		Poor	
		Too clayey	0.00	Depth to saturated zone	0.00	Too Clayey	0.00
				Shrink-swell	0.43	Depth to saturated zone	0.00
Nw:							
New Cambria	100	Poor		Fair		Poor	
		Low content of organic matter	0.00	Shrink-swell	0.12	Too Clayey	0.00
		Too clayey	0.00				
Oe:							
Owens	100	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Low content of organic matter	0.00	Shrink-swell	0.12	Too Clayey	0.00
		Depth to bedrock	0.00	Slope	0.98	Slope	0.00
		Too clayey	0.00				
Pe:							
Plevna	100	Poor		Poor		Poor	
		Low content of organic matter	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
Pr:							
Pratt	100	Poor		Good		Poor	
		Wind erosion	0.00			Too sandy	0.00
		Low content of organic matter	0.00				
		Too sandy	0.00				
Ps:							
Pratt	100	Poor		Good		Poor	
		Wind erosion	0.00			Too sandy	0.00
		Low content of organic matter	0.00				
		Too sandy	0.00				
Pt:							
Pratt	60	Poor		Good		Poor	
		Wind erosion	0.00			Too sandy	0.00
		Low content of organic matter	0.00			Slope	0.84
		Too sandy	0.00				

CONSTRUCTION MATERIALS--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Tivoli	40	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00			Slope	0.84
		Low content of organic matter	0.00				
		Droughty	0.02				
Qw:							
Quinlan	55	Poor		Poor		Poor	
		Depth to bedrock	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Droughty	0.00	Slope	0.98	Slope	0.00
		Low content of organic matter	0.50				
		No water erosion limitation	0.99				
Woodward	45	Fair		Poor		Fair	
		Depth to bedrock	0.29	Depth to bedrock	0.00	Slope	0.16
		Droughty	0.62			Depth to bedrock	0.29
		No water erosion limitation	0.99				
SAP:							
Sand Pit	100	Not rated		Not rated		Not rated	
Sh:							
Shellabarger	100	Poor		Good		Good	
		Low content of organic matter	0.00				
		Too acid	0.84				
Th:							
Tivoli	100	Poor		Fair		Poor	
		Too sandy	0.00	Slope	0.50	Too sandy	0.00
		Wind erosion	0.00			Slope	0.00
		Droughty	0.00				
		Low content of organic matter	0.08				
To:							
Tobin	100	Fair		Fair		Good	
		Low content of organic matter	0.50	Shrink-swell	0.98		
		Water erosion	0.90				
Ts:							
Tobin	100	Fair		Fair		Good	
		Low content of organic matter	0.50	Shrink-swell	0.98		
		Water erosion	0.90				
Uc:							
Uly	100	Poor		Good		Good	
		Low content of organic matter	0.00				
		Water erosion	0.90				
W:							
Water	100	Poor		Poor		Poor	
		Low content of organic matter	0.00	Slope	0.00	Slope	0.00
				Low strength	0.00		
Wa:							
Waldeck	100	Poor		Good		Good	
		Low content of organic matter	0.00				

RECREATIONAL INTERPRETATIONS
Kiowa County, Kansas

Recreation

The soils of the survey area are rated in the following tables according to limitations that affect their suitability for recreation. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. Not limited indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. Slightly limited indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. Somewhat limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the tables are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The information in this table can be supplemented by other information in this survey, for example, interpretations for building site development, construction materials, sanitary facilities, and water management.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas.

The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

RECREATIONAL INTERPRETATIONS--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
007CF:							
Clairemont	100	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.40	Flooding	1.00
025AB:							
Albion	60	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Slope	0.04	Slope	1.00
						Gravel content	0.06
Shellabarger	40	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Slope	0.04	Slope	1.00
025PG:							
Penden	100	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
025SH:							
Shellabarger	100	Not limited		Not limited		Somewhat limited	
						Slope	0.50
033AC:							
Abilene	100	Not limited		Not limited		Somewhat limited	
						Slope	0.00
033CK:							
Case	100	Not limited		Not limited		Somewhat limited	
						Slope	0.87
033CS:							
Clark	100	Not limited		Not limited		Somewhat limited	
						Slope	0.00
033CT:							
Clark	100	Not limited		Not limited		Somewhat limited	
						Slope	0.87
033ED:							
Elandco	100	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Flooding	0.60
033EF:							
Elandco	100	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.40	Flooding	1.00
033KC:							
Kanza	100	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Too sandy	0.92	Flooding	1.00
		Depth to saturated zone	0.98	Depth to saturated zone	0.75	Depth to saturated zone	0.98
		Too sandy	0.92	Flooding	0.40	Too sandy	0.92
033LN:							
Lincoln	100	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Too sandy	0.91	Too sandy	0.91
		Too sandy	0.91			Flooding	0.60
033QR:							
Quinlan	55	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.37	Slope	0.37	Slope	1.00
Woodward	45	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
						Depth to bedrock	0.46
033SH:							
Shellabarger	100	Not limited		Not limited		Somewhat limited	
						Slope	0.00
033SM:							
Shellabarger	100	Not limited		Not limited		Somewhat limited	
						Slope	0.87
047PA:							
Platte	100	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.98
		Depth to saturated zone	0.98			Flooding	0.60
047WA:							
Waldeck	100	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Flooding	0.60
057HD:							
Holdrege	100	Not limited		Not limited		Somewhat limited	
						Slope	0.00
057PR:							
Pratt	100	Somewhat limited		Somewhat limited		Very limited	
		Too sandy	0.37	Too sandy	0.37	Slope	1.00
						Too sandy	0.37
057PT:							
Pratt	60	Somewhat limited		Somewhat limited		Very limited	
		Too sandy	0.37	Too sandy	0.37	Slope	1.00
		Slope	0.16	Slope	0.16	Too sandy	0.37
Tivoli	40	Somewhat limited		Somewhat limited		Very limited	
		Too sandy	0.92	Too sandy	0.92	Slope	1.00
		Slope	0.16	Slope	0.16	Too sandy	0.92
057TV:							
Tivoli	100	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00

RECREATIONAL INTERPRETATIONS--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
		Slope	0.84	Slope	0.84	Slope	1.00
151BC:							
Blanket	100	Not limited		Not limited		Somewhat limited	
						Slope	0.13
151BH:							
Blanket	100	Not limited		Not limited		Somewhat limited	
						Slope	0.00
151FE:							
Farnum	100	Not limited		Not limited		Not limited	
151NM:							
Naron	100	Not limited		Not limited		Somewhat limited	
						Slope	0.00
151SE:							
Shellabarger	100	Not limited		Not limited		Somewhat limited	
						Slope	0.13
1324:							
Carway	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
Carbika	30	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
1725:							
Farnum	40	Not limited		Not limited		Not limited	
Funmar	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.39	Restricted permeability	0.39	Restricted permeability	0.39
1726:							
Farnum	40	Not limited		Not limited		Somewhat limited	
						Slope	0.00
Funmar	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.39	Restricted permeability	0.39	Restricted permeability	0.39
						Slope	0.00
1985:							
Hayes	60	Not limited		Not limited		Somewhat limited	
						Slope	0.13
1986:							
Hayes	55	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.87	Too sandy	0.87	Too sandy	0.87
						Slope	0.13
Solvay	20	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.37	Too sandy	0.37	Too sandy	0.37
1988:							
Hayes	70	Not limited		Not limited		Very limited	
						Slope	1.00
2556:							
Langdon	50	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
		Slope	0.00	Slope	0.00	Slope	1.00
3512:							
Saltcreek	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.39	Restricted permeability	0.39	Restricted permeability	0.39
						Slope	0.00
Naron	50	Not limited		Not limited		Somewhat limited	
						Slope	0.00
3540:							
Solvay	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.37	Too sandy	0.37	Too sandy	0.37
3640:							
Tivin	95	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Too sandy	1.00
An:							
Albion	100	Not limited		Not limited		Somewhat limited	
						Slope	0.13
						Gravel content	0.06
As:							
Albion	65	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.16	Slope	0.16	Slope	1.00
						Gravel content	0.06
Shellabarger	35	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.16	Slope	0.16	Slope	1.00

RECREATIONAL INTERPRETATIONS--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
At:							
Attica	100	Somewhat limited Too sandy	 0.96	Somewhat limited Too sandy	 0.96	Somewhat limited Too sandy Slope	 0.96 0.13
Ax:							
Attica	60	Somewhat limited Too sandy	 0.96	Somewhat limited Too sandy	 0.96	Somewhat limited Too sandy Slope	 0.96 0.13
Carwile	40	Very limited Depth to saturated zone Restricted permeability	 1.00 0.94	Very limited Depth to saturated zone Restricted permeability	 1.00 0.94	Very limited Depth to saturated zone Restricted permeability	 1.00 0.94
BOP:							
Borrow Pits	100	Not rated		Not rated		Not rated	
Ca:							
Canadian	100	Very limited Flooding	 1.00	Not limited		Not limited	
Cc:							
Carwile	100	Very limited Depth to saturated zone Restricted permeability	 1.00 0.94	Very limited Depth to saturated zone Restricted permeability	 1.00 0.94	Very limited Depth to saturated zone Restricted permeability	 1.00 0.94
Ce:							
Case	100	Not limited		Not limited		Somewhat limited Slope	 0.87
Cf:							
Case	100	Somewhat limited Slope	 0.37	Somewhat limited Slope	 0.37	Very limited Slope	 1.00
Cg:							
Case	65	Somewhat limited Slope	 0.37	Somewhat limited Slope	 0.37	Very limited Slope	 1.00
Canlon	35	Very limited Depth to bedrock Slope	 1.00 0.96	Very limited Depth to bedrock Slope	 1.00 0.96	Very limited Slope Depth to bedrock Gravel content	 1.00 1.00 0.06
Ck:							
Clark	100	Not limited		Not limited		Somewhat limited Slope	 0.00
Cm:							
Clark	100	Not limited		Not limited		Somewhat limited Slope	 0.87
Co:							
Coly	100	Not limited		Not limited		Very limited Slope	 1.00
Cp:							
Coly	100	Very limited Slope	 1.00	Very limited Slope	 1.00	Very limited Slope	 1.00
Ct:							
Coly	70	Very limited Slope	 1.00	Very limited Slope	 1.00	Very limited Slope	 1.00
Tobin	30	Very limited Flooding	 1.00	Somewhat limited Flooding	 0.40	Very limited Flooding	 1.00
Da:							
Dale	100	Very limited Flooding	 1.00	Not limited		Not limited	
Fa:							
Farnum	100	Not limited		Not limited		Not limited	
Fb:							
Farnum	100	Not limited		Not limited		Somewhat limited Slope	 0.00
Ha:							
Harney	100	Not limited		Not limited		Not limited	
Hb:							
Harney	100	Not limited		Not limited		Somewhat limited Slope	 0.00
He:							
Hedville	70	Very limited Depth to bedrock Slope	 1.00 1.00	Very limited Depth to bedrock Slope	 1.00 1.00	Very limited Slope Depth to bedrock Content of large stones Gravel content	 1.00 1.00 0.03 0.02
Rock Outcrop	30	Not rated		Not rated		Not rated	
Ho:							
Holdrege	100	Not limited		Not limited		Not limited	

RECREATIONAL INTERPRETATIONS--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Hp:							
Holdrege	100	Not limited		Not limited		Somewhat limited	
						Slope	0.00
Kr:							
Krier	100	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Depth to saturated zone	0.19	Flooding	0.60
		Depth to saturated zone	0.39	Salinity	0.13	Depth to saturated zone	0.39
		Salinity	0.13			Salinity	0.13
Lh:							
Lancaster	65	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.00	Slope	0.00	Slope	1.00
						Depth to bedrock	0.95
Hedville	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.63	Slope	0.63	Slope	1.00
						Content of large stones	0.03
						Gravel content	0.02
Ln:							
Lincoln	100	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Flooding	0.60
M-W:							
Miscellaneous Water	100	Not rated		Not rated		Not rated	
Na:							
Naron	100	Not limited		Not limited		Not limited	
Nb:							
Naron	100	Not limited		Not limited		Somewhat limited	
						Slope	0.00
Ne:							
Ness	100	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Too clayey	0.50	Too clayey	0.50	Too clayey	0.50
		Restricted permeability	0.45	Restricted permeability	0.45	Restricted permeability	0.45
Nw:							
New Cambria	100	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Too clayey	0.50	Too clayey	0.50
		Too clayey	0.50	Restricted permeability	0.39	Restricted permeability	0.39
		Restricted permeability	0.39				
Oe:							
Owens	100	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50	Too clayey	0.50	Too clayey	0.50
		Restricted permeability	0.45	Restricted permeability	0.45	Restricted permeability	0.45
Pe:							
Plevna	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Flooding	0.40	Depth to saturated zone	1.00
Pr:							
Pratt	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.37	Too sandy	0.37	Too sandy	0.37
						Slope	0.13
Ps:							
Pratt	100	Somewhat limited		Somewhat limited		Very limited	
		Too sandy	0.37	Too sandy	0.37	Slope	1.00
		Slope	0.00	Slope	0.00	Too sandy	0.37
Pt:							
Pratt	60	Somewhat limited		Somewhat limited		Very limited	
		Too sandy	0.37	Too sandy	0.37	Slope	1.00
		Slope	0.16	Slope	0.16	Too sandy	0.37
Tivoli	40	Somewhat limited		Somewhat limited		Very limited	
		Too sandy	0.92	Too sandy	0.92	Slope	1.00
		Slope	0.16	Slope	0.16	Too sandy	0.92
Qw:							
Quinlan	55	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
Woodward	45	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.84	Slope	0.84	Slope	1.00

RECREATIONAL INTERPRETATIONS--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
						Depth to bedrock	0.71
SAP:							
Sand Pit	100	Not rated		Not rated		Not rated	
Sh:							
Shellabarger	100	Not limited		Not limited		Somewhat limited	
						Slope	0.50
Th:							
Tivoli	100	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Too sandy	1.00
To:							
Tobin	100	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.40	Flooding	1.00
Ts:							
Tobin	100	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Flooding	0.60
Uc:							
Uly	100	Not limited		Not limited		Somewhat limited	
						Slope	0.87
W:							
Water	100	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
Wa:							
Waldeck	100	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Flooding	0.60

RECREATIONAL INTERPRETATIONS--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct of map unit	Paths and trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value
007CF:					
Clairemont	100	Somewhat limited		Very limited	
		Flooding	0.40	Flooding	1.00
025AB:					
Albion	60	Not limited		Somewhat limited	
				Slope	0.04
Shellabarger	40	Not limited		Somewhat limited	
				Slope	0.04
025PG:					
Penden	100	Not limited		Somewhat limited	
				Slope	0.37
025SH:					
Shellabarger	100	Not limited		Not limited	
033AC:					
Abilene	100	Not limited		Not limited	
033CK:					
Case	100	Not limited		Not limited	
033CS:					
Clark	100	Not limited		Not limited	
033CT:					
Clark	100	Not limited		Not limited	
033ED:					
Elandco	100	Not limited		Somewhat limited	
				Flooding	0.60
033EF:					
Elandco	100	Somewhat limited		Very limited	
		Flooding	0.40	Flooding	1.00
033KC:					
Kanza	100	Somewhat limited		Very limited	
		Too sandy	0.92	Flooding	1.00
		Depth to saturated zone	0.44	Depth to saturated zone	0.75
		Flooding	0.40	Droughty	0.03
033LN:					
Lincoln	100	Somewhat limited		Somewhat limited	
		Too sandy	0.91	Droughty	0.92
				Flooding	0.60
033QR:					
Quinlan	55	Not limited		Very limited	
				Depth to bedrock	1.00
				Droughty	0.74
				Slope	0.37
Woodward	45	Not limited		Somewhat limited	
				Depth to bedrock	0.46
				Slope	0.37
033SH:					
Shellabarger	100	Not limited		Not limited	
033SM:					
Shellabarger	100	Not limited		Not limited	
047PA:					
Platte	100	Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.44	Depth to saturated zone	0.75
				Flooding	0.60
				Droughty	0.57
047WA:					
Waldeck	100	Not limited		Somewhat limited	
				Flooding	0.60
057HD:					
Holdrege	100	Not limited		Not limited	
057PR:					
Pratt	100	Somewhat limited		Not limited	
		Too sandy	0.37		
057PT:					
Pratt	60	Somewhat limited		Somewhat limited	
		Too sandy	0.37	Slope	0.16
Tivoli	40	Somewhat limited		Somewhat limited	
		Too sandy	0.92	Droughty	0.48
				Slope	0.16
057TV:					
Tivoli	100	Very limited		Somewhat limited	
		Too sandy	1.00	Slope	0.84
				Droughty	0.64
151BC:					
Blanket	100	Not limited		Not limited	
151BH:					
Blanket	100	Not limited		Not limited	
151FE:					
Farnum	100	Not limited		Not limited	
151NM:					
Naron	100	Not limited		Not limited	

RECREATIONAL INTERPRETATIONS--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct of map unit	Paths and trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value
151SE:					
Shellabarger	100	Not limited		Not limited	
1324:					
Carway	50	Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00
Carbika	30	Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00
1725:					
Farnum	40	Not limited		Not limited	
Funmar	40	Not limited		Not limited	
1726:					
Farnum	40	Not limited		Not limited	
Funmar	40	Not limited		Not limited	
1985:					
Hayes	60	Not limited		Not limited	
1986:					
Hayes	55	Somewhat limited		Not limited	
		Too sandy	0.87		
Solvay	20	Somewhat limited		Not limited	
		Too sandy	0.37		
1988:					
Hayes	70	Not limited		Not limited	
2556:					
Langdon	50	Very limited		Somewhat limited	
		Too sandy	1.00	Droughty	0.97
				Slope	0.00
3512:					
Saltcreek	50	Not limited		Not limited	
Naron	50	Not limited		Not limited	
3540:					
Solvay	90	Somewhat limited		Not limited	
		Too sandy	0.37		
3640:					
Tivin	95	Very limited		Very limited	
		Too sandy	1.00	Slope	1.00
		Slope	0.00	Droughty	0.98
An:					
Albion	100	Not limited		Not limited	
As:					
Albion	65	Not limited		Somewhat limited	
				Slope	0.16
Shellabarger	35	Not limited		Somewhat limited	
				Slope	0.16
At:					
Attica	100	Somewhat limited		Not limited	
		Too sandy	0.96		
Ax:					
Attica	60	Somewhat limited		Not limited	
		Too sandy	0.96		
Carwile	40	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
BOP:					
Borrow Pits	100	Not rated		Not rated	
Ca:					
Canadian	100	Not limited		Not limited	
Cc:					
Carwile	100	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
Ce:					
Case	100	Not limited		Not limited	
Cf:					
Case	100	Not limited		Somewhat limited	
				Slope	0.37
Cg:					
Case	65	Not limited		Somewhat limited	
				Slope	0.37
Canlon	35	Not limited		Very limited	
				Depth to bedrock	1.00
				Slope	0.96
				Droughty	0.70

RECREATIONAL INTERPRETATIONS--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct of map unit	Paths and trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Ck:					
Clark	100	Not limited		Not limited	
Cm:					
Clark	100	Not limited		Not limited	
Co:					
Coly	100	Not limited		Not limited	
Cp:					
Coly	100	Very limited		Very limited	
		Slope	1.00	Slope	1.00
Ct:					
Coly	70	Somewhat limited		Very limited	
		Slope	0.00	Slope	1.00
Tobin	30	Somewhat limited		Very limited	
		Flooding	0.40	Flooding	1.00
Da:					
Dale	100	Not limited		Not limited	
Fa:					
Farnum	100	Not limited		Not limited	
Fb:					
Farnum	100	Not limited		Not limited	
Ha:					
Harney	100	Not limited		Not limited	
Hb:					
Harney	100	Not limited		Not limited	
He:					
Hedville	70	Somewhat limited		Very limited	
		Slope	0.92	Depth to bedrock	1.00
				Slope	1.00
				Droughty	0.95
				Content of large stones	0.03
Rock Outcrop	30	Not rated		Not rated	
Ho:					
Holdrege	100	Not limited		Not limited	
Hp:					
Holdrege	100	Not limited		Not limited	
Kr:					
Krier	100	Not limited		Somewhat limited	
				Flooding	0.60
				Droughty	0.35
				Depth to saturated zone	0.19
				Salinity	0.13
Lh:					
Lancaster	65	Not limited		Somewhat limited	
				Depth to bedrock	0.95
				Slope	0.00
Hedville	35	Not limited		Very limited	
				Depth to bedrock	1.00
				Droughty	0.95
				Slope	0.63
				Content of large stones	0.03
Ln:					
Lincoln	100	Not limited		Somewhat limited	
				Droughty	0.80
				Flooding	0.60
M-W:					
Miscellaneous Water	100	Not rated		Not rated	
Na:					
Naron	100	Not limited		Not limited	
Nb:					
Naron	100	Not limited		Not limited	
Ne:					
Ness	100	Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00
		Too clayey	0.50	Too clayey	1.00
Nw:					
New Cambria	100	Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	1.00
Oe:					
Owens	100	Somewhat limited		Very limited	
		Too clayey	0.50	Depth to bedrock	1.00
		Slope	0.02	Droughty	1.00

RECREATIONAL INTERPRETATIONS--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Paths and trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value
				Too clayey	1.00
				Slope	1.00
Pe:					
Plevna	100	Very limited		Very limited	
		Depth to saturated zone	1.00	Flooding	1.00
		Flooding	0.40	Depth to saturated zone	1.00
Pr:					
Pratt	100	Somewhat limited		Not limited	
		Too sandy	0.37		
Ps:					
Pratt	100	Somewhat limited		Somewhat limited	
		Too sandy	0.37	Slope	0.00
Pt:					
Pratt	60	Somewhat limited		Somewhat limited	
		Too sandy	0.37	Slope	0.16
Tivoli	40	Somewhat limited		Somewhat limited	
		Too sandy	0.92	Droughty	0.96
				Slope	0.16
Qw:					
Quinlan	55	Somewhat limited		Very limited	
		Slope	0.02	Depth to bedrock	1.00
				Slope	1.00
				Droughty	0.62
Woodward	45	Not limited		Somewhat limited	
				Slope	0.84
				Depth to bedrock	0.71
SAP:					
Sand Pit	100	Not rated		Not rated	
Sh:					
Shellabarger	100	Not limited		Not limited	
Th:					
Tivoli	100	Very limited		Very limited	
		Too sandy	1.00	Slope	1.00
		Slope	0.50	Droughty	1.00
To:					
Tobin	100	Somewhat limited		Very limited	
		Flooding	0.40	Flooding	1.00
Ts:					
Tobin	100	Not limited		Somewhat limited	
				Flooding	0.60
Uc:					
Uly	100	Not limited		Not limited	
W:					
Water	100	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Water erosion	1.00		
Wa:					
Waldeck	100	Not limited		Somewhat limited	
				Flooding	0.60

WILDLIFE INTERPRETATIONS
Kiowa County, Kansas

Use and Explanation of Wildlife Interpretations

Soils directly affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the development of water impoundments. The kind and abundance of wildlife that populate an area depend largely on the amount and distribution of food, cover, water, and living space. If any one of these elements is missing, inadequate, or inaccessible, wildlife will be scarce or will not inhabit the area. If the soils have the potential, wildlife habitat can be created or improved by planting appropriate vegetation, properly managing the existing plant cover, and fostering the natural establishment of desirable plants.

In the Wildlife Interpretations table, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

Suitability Ratings

The potential of the soil is rated good, fair, poor, or very poor.

Good − means that the element of wildlife habitat or the kind of habitat is easily created, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected if the soil is used for the designated purpose.

Fair − means that the element of wildlife habitat or kind of habitat can be created, improved, or maintained in most places. Moderately intensive management is required for satisfactory results.

Poor − means that limitations are severe for the designated element or kind of wildlife habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and requires intensive effort.

Very Poor − means that limitations are very severe for the designated element or kind of wildlife habitat. Habitat is difficult to create, improve, or maintain in most places, and management is difficult and requires intensive effort.

Description of Wildlife Habitat Elements

Openland habitat consists of croplands, pastures, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The kind of wildlife attracted to these areas include bobwhite quail, pheasant, meadowlark, field sparrow, killdeer, cottontail rabbit, red fox, and coyote.

Woodland habitat consists of hardwood or conifers, or a mixture of these and associated grasses, legumes and wild herbaceous plants. Examples of wildlife attracted to this habitat are wild turkey, thrushes, woodpeckers, owl, tree squirrels, raccoon, and deer.

Wetland habitat consists of water−tolerant plants in open, marshy or swampy, shallow water areas. Examples of wildlife attracted to this habitat are ducks, geese, herons, bitterns, rails, kingfishers, shorebirds, muskrat, mink, and beaver.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed−producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture also are considerations. Examples of grasses and legumes are fescue, lovegrass, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, wheatgrass, and grama.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit−producing shrubs that are suitable for planting on soils rated good are Russian−olive, autumn−olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, cedar, and juniper.

Shrubs are bushy woody plants that produce fruit, buds, twigs, bark, and foliage. Soil properties and features that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and soil moisture. Examples of shrubs are fragrant sumac, chokecherry, American plum, sand plum, and gorden currant.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, saltgrass, cordgrass, rushes, sedges, and cattails.

WILDLIFE INTERPRETATIONS--Continued
Kiowa County, Kansas

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, pheasant, meadowlark, field sparrow, cottontail, red fox and coyote.

Habitat for woodland wildlife consists of areas of deciduous and/or coniferous plants and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, and beaver.

Habitat for rangeland wildlife consists of areas of shrubs and wild herbaceous plants. Wildlife attracted to rangeland include antelope, deer, cottontail rabbit, prairie chicken, meadowlark, quail, and pheasant.

WILDLIFE INTERPRETATIONS
Kiowa County, Kansas

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hard-wood trees	Conif-erous plants	Shrubs	Wetland plants	Shallow water areas	Open-land wild-life	Wood-land wild-life	Wetland wild-life	Range-land wild-life
007CF: CLAIREMONT------	Very poor	Poor	Fair	---	Very poor	Good	Very poor	Very poor	Poor	---	---	Fair
025AB: ALBION----------	Poor	Fair	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
SHELLABARGER----	Poor	Fair	Good	---	---	Good	Very poor	Very poor	Fair	---	Very poor	Good
025PG: PENDEN----------	Poor	Fair	Fair	---	---	Poor	Very poor	Poor	Fair	---	Very poor	Fair
025SH: SHELLABARGER----	Fair	Good	Good	---	---	Good	Poor	Very poor	Good	---	Very poor	Good
033AC: ABILENE---------	Good	Good	Fair	---	Good	Good	Poor	Very poor	Good	---	Very poor	Fair
033CK: CASE------------	Fair	Good	Fair	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Fair
033CS: CLARK-----------	Fair	Good	Fair	Fair	Fair	Fair	Poor	Very poor	Fair	---	Very poor	Fair
033CT: CLARK-----------	Fair	Good	Fair	Fair	Fair	Fair	Poor	Very poor	Fair	---	Very poor	Fair
033ED: ELANDCO---------	Good	Good	Fair	---	---	Good	Poor	Very poor	Good	---	Very poor	Fair
033EF: ELANDCO---------	Very poor	Poor	Fair	---	---	Good	Poor	Very poor	Poor	---	Very poor	Fair
033KC: KANZA-----------	Very poor	Poor	Fair	---	---	Fair	Fair	Fair	Poor	---	Fair	Fair
033LN: LINCOLN---------	Fair	Fair	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
033QR: QUINLAN---------	Poor	Poor	Fair	---	---	Poor	Very poor	Very poor	Fair	---	Very poor	Poor
WOODWARD--------	Fair	Good	Good	---	---	Fair	Very poor	Very poor	Good	---	Very poor	Fair
033SH: SHELLABARGER----	Good	Good	Good	---	---	Good	Poor	Very poor	Good	---	Very poor	Good
033SM: SHELLABARGER----	Fair	Good	Good	---	---	Good	Poor	Very poor	Good	---	Very poor	Good
047PA: PLATTE----------	Fair	Good	Fair	Poor	Fair	Good	Fair	Good	Fair	Poor	Good	Fair
047WA: WALDECK---------	Fair	Good	Good	---	---	Good	Fair	Fair	Good	---	Fair	Good
057HD: HOLDREGE--------	Good	Good	Fair	Good	Fair	Fair	Very poor	Very poor	Good	Good	Very poor	Fair
057PR: PRATT-----------	Fair	Good	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
057PT: PRATT-----------	Fair	Good	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair

WILDLIFE INTERPRETATIONS--Continued
Kiowa County, Kansas

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
TIVOLI	Poor	Poor	Fair	---	---	Poor	Very poor	Very poor	Poor	---	Very poor	Poor
057TV:												
TIVOLI	Poor	Poor	Fair	---	---	Poor	Very poor	Very poor	Poor	---	Very poor	Poor
151BC:												
BLANKET	Good	Good	Fair	---	Good	Good	Poor	Very poor	Good	---	Very poor	Fair
151BH:												
BLANKET	Good	Good	Fair	---	Good	Good	Poor	Very poor	Good	---	Very poor	Fair
151FE:												
FARNUM	Good	Good	Good	---	---	Good	Poor	Poor	Good	---	Poor	Good
151NM:												
NARON	Good	Good	Good	---	---	Fair	Poor	Very poor	Good	---	Very poor	Fair
151SE:												
SHELLABARGER	Good	Good	Good	---	---	Good	Poor	Very poor	Good	---	Very poor	Good
1324:												
CARWAY	Fair	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
CARBIKA	Fair	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
1725:												
FARNUM	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor	Good
FUNMAR	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor	Good
1726:												
FARNUM	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor	Good
FUNMAR	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor	Good
1985:												
HAYES	Fair	Fair	Good	Good	Good	Good	Poor	Very poor	Fair	Good	Very poor	Fair
1986:												
HAYES	Fair	Fair	Good	Good	Good	Good	Poor	Very poor	Fair	Good	Very poor	Fair
SOLVAY	Fair	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor	Good
1988:												
HAYES	Fair	Fair	Good	Good	Good	Good	Poor	Very poor	Fair	Good	Very poor	Fair
2556:												
LANGDON	Poor	Poor	Fair	Good	Fair	Poor	Very poor	Very poor	Poor	Poor	Very poor	Poor
3512:												
SALTCREEK	Good	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor	Fair
NARON	Good	Good	Good	Good	Good	Fair	Poor	Very poor	Good	Fair	Very poor	Good
3540:												
SOLVAY	Fair	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor	Good
3640:												
TIVIN	Poor	Poor	Fair	Fair	Fair	Poor	Very poor	Very poor	Poor	Poor	Very poor	Poor
An:												
ALBION	Fair	Good	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
As:												
ALBION	Poor	Fair	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
SHELLABARGER	Poor	Fair	Good	---	---	Good	Very poor	Very poor	Fair	---	Very poor	Good

WILDLIFE INTERPRETATIONS--Continued
Kiowa County, Kansas

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hard-wood trees	Conif-erous plants	Shrubs	Wetland plants	Shallow water areas	Open-land wild-life	Wood-land wild-life	Wetland wild-life	Range-land wild-life
At:												
ATTICA	Fair	Fair	Good	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Fair
Ax:												
ATTICA	Fair	Fair	Good	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Fair
CARWILE	Fair	Good	Good	---	---	Good	Good	Fair	Good	---	Fair	Good
BOP:												
BORROW PITS	---	---	---	---	---	---	---	---	---	---	---	---
Ca:												
CANADIAN	Good	Good	Good	---	---	Good	Poor	Very poor	Good	---	Very poor	Good
Cc:												
CARWILE	Fair	Good	Good	---	---	Good	Good	Fair	Good	---	Fair	Good
Ce:												
CASE	Fair	Good	Fair	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Fair
Cf:												
CASE	Poor	Fair	Fair	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Fair
Cg:												
CASE	Poor	Fair	Fair	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Fair
CANLON	Poor	Poor	Poor	---	---	Poor	Very poor	Very poor	Poor	---	Very poor	Poor
Ck:												
CLARK	Fair	Good	Fair	Fair	Fair	Fair	Poor	Very poor	Fair	---	Very poor	Fair
Cm:												
CLARK	Fair	Good	Fair	Fair	Fair	Fair	Poor	Very poor	Fair	---	Very poor	Fair
Co:												
COLY	Fair	Good	Good	Good	Fair	Fair	Very poor	Very poor	Fair	Good	Very poor	Fair
Cp:												
COLY	Very poor	Very poor	Poor	Poor	Poor	Fair	Very poor	Very poor	Poor	Poor	Very poor	Fair
Ct:												
COLY	Poor	Fair	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor	Fair
TOBIN	Good	Good	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor	Good
Da:												
DALE	Good	Good	Fair	---	---	Good	Poor	Very poor	Good	---	Very poor	Fair
Fa:												
FARNUM	Good	Good	Good	---	---	Good	Poor	Poor	Good	---	Poor	Good
Fb:												
FARNUM	Good	Good	Good	---	---	Good	Poor	Poor	Good	---	Poor	Good
Ha:												
HARNEY	Good	Good	Good	Poor	Poor	Good	Poor	Fair	Good	---	Poor	Good
Hb:												
HARNEY	Good	Good	Good	Poor	Poor	Good	Poor	Fair	Good	---	Poor	Good
He:												
HEDVILLE	Very poor	Poor	Poor	---	---	Poor	Very poor	Very poor	Poor	---	Very poor	Poor
ROCK OUTCROP	---	---	---	---	---	---	---	---	---	---	---	---
Ho:												
HOLDREGE	Good	Good	Fair	Good	Fair	Fair	Very poor	Very poor	Good	Good	Very poor	Fair

WILDLIFE INTERPRETATIONS--Continued
Kiowa County, Kansas

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
Hp: HOLDREGE	Good	Good	Fair	Good	Fair	Fair	Very poor	Very poor	Good	Good	Very poor	Fair
Kr: KRIER	Poor	Poor	Fair	---	---	Poor	Good	Good	Poor	---	Good	Poor
Lh: LANCASTER	Fair	Good	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
HEDVILLE	Very poor	Poor	Poor	---	---	Poor	Very poor	Very poor	Poor	---	Very poor	Poor
Ln: LINCOLN	Fair	Fair	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
M-W: MISCELLANEOUS WATER	---	---	---	---	---	---	---	---	---	---	---	---
Na: NARON	Good	Good	Good	---	---	Fair	Poor	Very poor	Good	---	Very poor	Fair
Nb: NARON	Good	Good	Good	---	---	Fair	Poor	Very poor	Good	---	Very poor	Fair
Ne: NESS	Poor	Poor	Poor	---	---	Poor	Fair	Good	Poor	---	Good	Poor
Nw: NEW CAMBRIA	Fair	Fair	Poor	Good	Good	Fair	Poor	Poor	Fair	Good	Poor	Poor
Oe: OWENS	Very poor	Very poor	Good	Very poor	Very poor	---	Very poor	Very poor	Very poor	Very poor	Very poor	Good
Pe: PLEVNA	Poor	Fair	Fair	---	---	Fair	Good	Good	Fair	---	Good	Fair
Pr: PRATT	Fair	Good	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
Ps: PRATT	Fair	Good	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
Pt: PRATT	Fair	Good	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
TIVOLI	Poor	Poor	Fair	---	---	Poor	Very poor	Very poor	Poor	---	Very poor	Poor
Qw: QUINLAN	Poor	Poor	Fair	---	---	Poor	Very poor	Very poor	Fair	---	Very poor	Poor
WOODWARD	Fair	Good	Good	---	---	Fair	Very poor	Very poor	Good	---	Very poor	Fair
SAP: SAND PIT	---	---	---	---	---	---	---	---	---	---	---	---
Sh: SHELLABARGER	Fair	Good	Good	---	---	Good	Poor	Very poor	Good	---	Very poor	Good
Th: TIVOLI	Poor	Poor	Fair	---	---	Poor	Very poor	Very poor	Poor	---	Very poor	Poor
To: TOBIN	Good	Good	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor	Good
Ts: TOBIN	Good	Good	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor	Good

WILDLIFE INTERPRETATIONS--Continued
Kiowa County, Kansas

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
Uc: ULY	Fair	Good	Good	Good	Fair	Fair	Very poor	Very poor	Fair	Good	Very poor	Good
W: WATER	---	---	---	---	---	---	---	---	---	---	---	---
Wa: WALDECK	Fair	Good	Good	---	---	Good	Fair	Fair	Good	---	Fair	Good

YIELDS PER ACRE OF PASTURE AND HAYLAND
Kiowa County, Kansas

Use and Explanation of Pastureland and Hayland Interpretations

This subsection provides information concerning the suitability of soils for the production of pasture and hayland. This subsection may contain pasture and hayland suitability groupings, land capability and yield estimates, yield estimates for individual grasses or legumes, or other information pertaining to the production of forage.

Pasture and Hayland Suitability Groupings

Soils are placed in pasture and hayland groups according to their suitability for the production of forage. The soils in each group are enough alike to be suited to the same grasses or legumes, to have similar limitations and hazards, to require similar management, and to have similar productivity and other responses to management. Thus, the pasture and hayland suitability group is a convenient way of grouping the soils for their management. If used, these groupings are identified and described in other reports in the subsection.

Yield Estimates

The average yields per acre that can be expected of the principal pasture or hayland crops, under a high level of management, are presented in this subsection. In any given year, yields may be higher or lower than those indicated in the tables because of variations in rainfall or other climatic factors. The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

Under good management, proper grazing is essential for the production of high quality forage, stand survival, and erosion control. Proper grazing helps plants maintain sufficient and generally vigorous top growth during the growing season. Brush control is essential in many areas, and weed control generally is needed. Rotation grazing and renovation are also important management practices.

The Pasture and Hayland table show yield estimates in tons per acre and animal unit months for pasture and hayland groups. An animal unit month is the amount of forage required by one animal unit (AU) for 30 days. On animal unit (AU) is one (1000 pound) mature cow and a calf up to weaning age (usually six months of age) or their equivalent. The Natural Resources Conservation Service uses 900 pounds of air dry forage as the amount needed to meet this requirement. To maintain a healthy and vigorous plant community, the degree of use should never be greater than 50 percent. Therefore only 25 percent of the total biomass grown is considered consumed by the grazing animal. Animal Unit Months can be converted to air dry pounds per acre production by multiplying the AUM by 30 days, then by 30 pounds per day, and then by four. This figure is the amount of total forage production.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil in the Nontechnical Description section. Specific information on plants and yields can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

YIELDS PER ACRE OF PASTURE AND HAYLAND--Continued
Kiowa County, Kansas

(Yields in the "N" columns are for nonirrigated soils; those in the "I" columns are for irrigated soils. Yields are those that can be expected under a high level of nonirrigated and irrigated management by component. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil) Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Map symbol and soil name	Land capability		Alfalfa hay	
	N	I	N	I
			Tons	Tons
007CF: Clairemont	5w	---	---	---
025AB: Albion	6e	---	---	---
Shellabarger	6e	---	---	---
025PG: Penden	6e	---	---	---
025SH: Shellabarger	3e	---	2.00	6.00
033AC: Abilene	2e	2e	---	---
033CK: Case	4e	---	---	---
033CS: Clark	3e	---	---	---
033CT: Clark	4e	---	---	---
033ED: Elandco	2w	---	---	---
033EF: Elandco	6w	---	---	---
033KC: Kanza	5w	---	---	---
033LN: Lincoln	6w	---	---	---
033QR: Quinlan	6e	---	---	---
Woodward	6e	---	---	---
033SH: Shellabarger	2e	---	2.20	6.50
033SM: Shellabarger	3e	---	2.00	6.00
047PA: Platte	4w	4w	2.00	4.00
047WA: Waldeck	3w	---	3.50	5.00
057HD: Holdrege	2e	2e	2.30	6.00
057PR: Pratt	4e	3e	---	5.50
057PT: Pratt	4e	3e	---	5.50
Tivoli	6e	---	---	---
057TV: Tivoli	7e	---	---	---
151BC: Blanket	3e	---	---	---
151BH: Blanket	2e	---	---	---
151FE: Farnum	2e	1	3.00	7.00
151NM: Naron	2e	2e	3.00	6.50

YIELDS PER ACRE OF PASTURE AND HAYLAND--Continued
Kiowa County, Kansas

(Yields in the "N" columns are for nonirrigated soils; those in the "I" columns are for irrigated soils. Yields are those that can be expected under a high level of nonirrigated and irrigated management by component. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil) Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Map symbol and soil name	Land capability		Alfalfa hay	
	N	I	N	I
			Tons	Tons
151SE:				
Shellabarger	2e	---	2.20	6.50
1324:				
Carway	2w	---	5.00	---
Carbika	2w	---	5.00	---
1725:				
Farnum	2c	1	3.00	7.00
Funmar	2c	1	3.00	7.00
1726:				
Farnum	2c	1	3.00	7.00
Funmar	2c	1	3.00	7.00
1985:				
Hayes	3e	3e	3.00	6.00
1986:				
Hayes	3e	3e	3.00	6.00
Solvay	2e	---	5.00	6.00
1988:				
Hayes	3e	3e	3.00	6.00
2556:				
Langdon	6e	---	---	---
3512:				
Saltcreek	3e	1	3.00	7.00
Naron	3e	3e	3.00	6.50
3540:				
Solvay	2e	---	5.00	6.00
3640:				
Tivin	6e	---	---	---
An:				
Albion	3e	---	2.00	---
As:				
Albion	6e	---	---	---
Shellabarger	6e	---	---	---
At:				
Attica	2e	---	3.00	6.00
Ax:				
Attica	2e	---	3.00	6.00
Carwile	2w	---	---	---
BOP:				
Borrow Pits	---	---	---	---
Ca:				
Canadian	2e	---	3.50	---
Cc:				
Carwile	2w	---	---	---
Ce:				
Case	4e	---	---	---
Cf:				
Case	6e	---	---	---
Cg:				
Case	6e	---	---	---
Canlon	6s	---	---	---

YIELDS PER ACRE OF PASTURE AND HAYLAND--Continued
Kiowa County, Kansas

(Yields in the "N" columns are for nonirrigated soils; those in the "I" columns are for irrigated soils. Yields are those that can be expected under a high level of nonirrigated and irrigated management by component. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)
Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Map symbol and soil name	Land capability		Alfalfa hay	
	N	I	N	I
			Tons	Tons
Ck: Clark	3e	---	---	---
Cm: Clark	4e	---	---	---
Co: Coly	4e	4e	---	4.00
Cp: Coly	7e	---	---	---
Ct: Coly	6e	---	---	---
Tobin	5w	---	---	---
Da: Dale	2e	---	4.50	---
Fa: Farnum	2c	1	3.00	7.00
Fb: Farnum	2e	2e	3.00	6.50
Ha: Harney	2c	1	---	6.50
Hb: Harney	2e	2e	---	5.50
He: Hedville	7s	---	---	---
Rock Outcrop	8	---	---	---
Ho: Holdrege	2c	1	2.50	6.50
Hp: Holdrege	2e	2e	2.30	6.00
Kr: Krier	6s	---	---	---
Lh: Lancaster	6e	---	---	---
Hedville	7s	---	---	---
Ln: Lincoln	6w	---	---	---
M-W: Miscellaneous Water	---	---	---	---
Na: Naron	2e	1	3.00	7.00
Nb: Naron	3e	2e	3.00	6.50
Ne: Ness	6w	---	---	---
Nw: New Cambria	2s	2s	3.50	5.50
Oe: Owens	6e	---	---	---
Pe: Plevna	5w	---	---	---
Pr: Pratt	3e	3e	---	5.50
Ps: Pratt	4e	3e	---	5.50

YIELDS PER ACRE OF PASTURE AND HAYLAND--Continued
Kiowa County, Kansas

(Yields in the "N" columns are for nonirrigated soils; those in the "I" columns are for irrigated soils. Yields are those that can be expected under a high level of nonirrigated and irrigated management by component. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)
Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Map symbol and soil name	Land capability		Alfalfa hay	
	N	I	N	I
			Tons	Tons
Pt:				
Pratt	6e	---	---	5.50
Tivoli	7e	---	---	---
Qw:				
Quinlan	6e	---	---	---
Woodward	6e	---	---	---
SAP:				
Sand Pit	---	---	---	---
Sh:				
Shellabarger	3e	---	2.00	6.00
Th:				
Tivoli	7e	---	---	---
To:				
Tobin	5w	---	---	---
Ts:				
Tobin	2w	---	---	---
Uc:				
Uly	3e	3e	1.90	4.50
W:				
Water	---	---	---	---
Wa:				
Waldeck	3w	---	3.50	5.00

CONSERVATION TREE AND SHRUB MANAGEMENT
Kiowa County, Kansas

A Conservation Tree/Shrub Suitability Group (CTSG), formerly Windbreak Suitability Group, is a physiographic unit or area having similar climatic and edaphic characteristics that control the selection and height growth of trees and shrubs.

In this table, the Conservation Tree and Shrub Grouping is expressed as a group index number. The group index for Conservation Tree and Shrub groups (CTSG) are a guide for species best suited for different kinds of soil and for prediction height, growth, and effectiveness. The groupings can be used when selection woody plants for windbreaks, wildlife plantings riparian buffers, reforestation, other environmental plantings, recreation, landscaping, wetland restoration or enhancement and critical area plantings. CTSG's are developed to assure satisfactory species selection and adaptation to specific conditions of soil, climate and physiography. CTSG's are a guide for selection species best suited for different kinds of soil and prediction height growth and effectiveness.

All soil series mapped in the state have been placed in 10 groups of similar soil characteristics. Groups 1, 2, 3, 4, 6, and 9 are further divided into subgroups. In addition, all groups provide information by Major Land Resource Areas.

Each tree or shrub species has certain climatic and physiographic limits. Within these parameters a tree or shrub may be well or poorly suited because of soil characteristics. Each tree or shrub also has definable potentials of height growth depending on the factors just mentioned. Accurate definitions of potential heights are necessary for proper windbreak planning and design.

Windbreaks protect livestock, buildings, roads and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low–growing and high–growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil. Field windbreaks protect cropland and crops from wind, help to keep snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Windbreaks are often planted on land that did not grow trees originally. Knowledge of how trees perform on such land can be gained only by observing and recording their performance where trees have been planted and survived. The problem is compounded by the fact that many favorite windbreak species are not indigenous to the areas in which they are planted.

The Kansas Field Office Technical Guide Notice KS–230, Conservation Tree and Shrub Plantings Suitability Groups shows the adapted species listing for each group index number. Showing the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates are based on measurements and observation of established plantings that have been given adequate care. This information should be used to determine the placement of a windbreak, the area protected and the arrangement of species.

A number of attributes are included in the CTSG species tables for each group number found in this section of the Field Office Technical Guide. These attributes were rated subjectively and assigned a relative value to further assist those unfamiliar with individual species characteristics or desirability for the intended use. Definitions and explanations can be found. Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from the local office of the Natural Resources Conservation Service or of the Cooperative Extension Service or from a commercial nursery. See part 537 of the National Forestry Manual for additional information.

In the Tree and Shrub Management table interpretive ratings are given for various aspects of forest and conservation tree and shrub management. Some rating class terms indicate the degree to which the soils are suited to a specified forest management practice. Well suited indicates that the soil has features that are favorable for the specified practice and has no limitations. Good performance can be expected, and little or no maintenance is needed. Moderately well suited indicates that the soil has features that are moderately favorable for the specified practice. One or more soil properties are less than desirable and fair performance can be expected. Some maintenance is needed. Poorly suited indicates that the soil has one or more properties that are unfavorable for the specified practice. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. Unsuited indicates that the expected performance of the soil is unacceptable for the specified practice or that extreme measures are needed to overcome the undesirable soil properties.

The paragraphs that follow indicate the soil properties considered in rating the soils for forest and conservation tree and shrub management practices. More detailed information about the criteria used in the ratings is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet. Also, in the Kansas Field Office Technical Guide Notice KS–230, Conservation Tree and Shrub Plantings Suitability Groups.

Ratings in the columns suitability for hand planting and suitability for mechanical planting are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately well suited, poorly suited, or unsuited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column suitability for mechanical site preparation (surface) are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 1–foot is considered in the ratings.

Ratings in the column suitability for mechanical site preparation (deep) are based on slope, depth to a restrictive layer, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 3 feet is considered in the ratings.

Ratings in the column potential for seedling mortality are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. The soils are described as having a low, moderate, or high potential for seedling mortality. See the National Forestry Manual, Subpart B for criteria used in rating management concerns. Specific information on plants and yields can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

CONSERVATION TREE AND SHRUB MANAGEMENT
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. Pines and spruces are prone to disease problems. See text for further explanation of ratings in this table.)

Map symbol and soil name	Windbreak Group	Suitability for hand planting	Suitability for mechanical planting	Suitability for mechanical site preparation (surface)	Suitability for mechanical site preparation (deep)	Potential for seedling mortality
		Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
007CF:						
Clairemont	1K	Well suited	Well suited	Well suited	Well suited	Moderate Soil reaction
025AB:						
Albion	6G	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Shellabarger	5	Well suited	Moderately suited Slope	Well suited	Well suited	Low
025PG:						
Penden	8	Well suited	Moderately suited Slope	Well suited	Well suited	Moderate Soil reaction
025SH:						
Shellabarger	5	Well suited	Well suited	Well suited	Well suited	Low
033AC:						
Abilene	3	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
033CK:						
Case	8	Well suited	Moderately suited Slope	Well suited	Well suited	Moderate Soil reaction
033CS:						
Clark	8	Well suited	Well suited	Well suited	Well suited	Moderate Lime Soil reaction
033CT:						
Clark	8	Well suited	Moderately suited Slope	Well suited	Well suited	Moderate Lime Soil reaction
033ED:						
Elandco	1	Well suited	Well suited	Well suited	Well suited	Low
033EF:						
Elandco	1	Well suited	Well suited	Well suited	Well suited	Low
033KC:						
Kanza	2	Well suited	Well suited	Well suited	Well suited	Low
033LN:						
Lincoln	1K	Well suited	Well suited	Well suited	Well suited	Moderate Soil reaction
033QR:						
Quinlan	10	Well suited	Moderately suited Slope	Well suited	Well suited	Moderate Soil reaction
Woodward	8	Well suited	Moderately suited Slope	Well suited	Well suited	Low
033SH:						
Shellabarger	5	Well suited	Well suited	Well suited	Well suited	Low
033SM:						
Shellabarger	5	Well suited	Moderately suited Slope	Well suited	Well suited	Low
047PA:						
Platte	1K	Moderately suited Sandiness	Moderately suited Sandiness	Well suited	Well suited	Low
047WA:						
Waldeck	1K	Well suited	Well suited	Well suited	Well suited	Moderate Soil reaction
057HD:						
Holdrege	3	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
057PR:						
Pratt	7	Well suited	Moderately suited Slope	Well suited	Well suited	Low
057PT:						
Pratt	7	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Tivoli	7	Moderately suited Sandiness	Moderately suited Slope Sandiness	Well suited	Well suited	Low
057TV:						
Tivoli	7	Moderately suited Sandiness	Moderately suited Slope	Well suited	Well suited	Low

CONSERVATION TREE AND SHRUB MANAGEMENT
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. Pines and spruces are prone to disease problems. See text for further explanation of ratings in this table.)

Map symbol and soil name	Windbreak Group	Suitability for hand planting	Suitability for mechanical planting	Suitability for mechanical site preparation (surface)	Suitability for mechanical site preparation (deep)	Potential for seedling mortality
		Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
			Sandiness			
151BC:						
Blanket	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
151BH:						
Blanket	4C	Well suited	Well suited	Well suited	Well suited	Low
151FE:						
Farnum	3	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
151NM:						
Naron	5	Well suited	Well suited	Well suited	Well suited	Low
151SE:						
Shellabarger	5	Well suited	Well suited	Well suited	Well suited	Low
1324:						
Carway	2	Well suited	Well suited	Well suited	Well suited	High Wetness
Carbika	2	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	High Wetness
1725:						
Farnum	4	Well suited	Well suited	Well suited	Well suited	Low
Funmar	3	Well suited	Well suited	Well suited	Well suited	Low
1726:						
Farnum	4	Well suited	Well suited	Well suited	Well suited	Low
Funmar	3	Well suited	Well suited	Well suited	Well suited	Low
1985:						
Hayes	5	Well suited	Well suited	Well suited	Well suited	Moderate Available water
1986:						
Hayes	5	Well suited	Well suited	Well suited	Well suited	Moderate Available water
Solvay	5	Well suited	Well suited	Well suited	Well suited	Moderate Available water
1988:						
Hayes	5	Well suited	Moderately suited Slope	Well suited	Well suited	Moderate Available water
2556:						
Langdon	7	Moderately suited Sandiness	Moderately suited Sandiness Slope	Well suited	Well suited	Low
3512:						
Saltcreek	5	Well suited	Well suited	Well suited	Well suited	Moderate Available water
Naron	5	Well suited	Well suited	Well suited	Well suited	Moderate Available water
3540:						
Solvay	5	Well suited	Well suited	Well suited	Well suited	Moderate Available water
3640:						
Tivin	7	Moderately suited Sandiness	Moderately suited Slope Sandiness	Poorly suited Slope	Poorly suited Slope	Low
An:						
Albion	6G	Well suited	Well suited	Well suited	Well suited	Low
As:						
Albion	6G	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Shellabarger	5	Well suited	Moderately suited Slope	Well suited	Well suited	Low
At:						
Attica	5	Well suited	Well suited	Well suited	Well suited	Low
Ax:						
Attica	5	Well suited	Well suited	Well suited	Well suited	Low
Carwile	1	Well suited	Well suited	Well suited	Well suited	High Wetness
BOP:						
Borrow Pits		Not rated	Not rated	Not rated	Not rated	Not rated

CONSERVATION TREE AND SHRUB MANAGEMENT
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. Pines and spruces are prone to disease problems. See text for further explanation of ratings in this table.)

Map symbol and soil name	Windbreak Group	Suitability for hand planting	Suitability for mechanical planting	Suitability for mechanical site preparation (surface)	Suitability for mechanical site preparation (deep)	Potential for seedling mortality
		Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
Ca:						
Canadian	1	Well suited	Well suited	Well suited	Well suited	Low
Cc:						
Carwile	1	Well suited	Well suited	Well suited	Well suited	High Wetness
Ce:						
Case	8	Well suited	Moderately suited Slope	Well suited	Well suited	Moderate Soil reaction
Cf:						
Case	8	Well suited	Moderately suited Slope	Well suited	Well suited	Moderate Soil reaction
Cg:						
Case	8	Well suited	Moderately suited Slope	Well suited	Well suited	Moderate Soil reaction
Canlon	10	Well suited	Moderately suited Slope	Well suited	Unsuited Restrictive layer	Moderate Soil reaction
Ck:						
Clark	8	Well suited	Well suited	Well suited	Well suited	Moderate Lime Soil reaction
Cm:						
Clark	8	Well suited	Moderately suited Slope	Well suited	Well suited	Moderate Lime Soil reaction
Co:						
Coly	8	Well suited	Moderately suited Slope	Well suited	Well suited	Moderate Soil reaction
Cp:						
Coly	8	Well suited	Unsuited Slope	Poorly suited Slope	Poorly suited Slope	Moderate Soil reaction
Ct:						
Coly	8	Well suited	Moderately suited Slope	Poorly suited Slope	Poorly suited Slope	Moderate Soil reaction
Tobin	1	Well suited	Well suited	Well suited	Well suited	Low
Da:						
Dale	1	Well suited	Well suited	Well suited	Well suited	Low
Fa:						
Farnum	3	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Fb:						
Farnum	3	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Ha:						
Harney	3	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Hb:						
Harney	3	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
He:						
Hedville	10	Well suited	Poorly suited Slope Rock fragments	Poorly suited Slope	Poorly suited Slope	Low
Rock Outcrop		Not rated	Not rated	Not rated	Not rated	Not rated
Ho:						
Holdrege	3	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Hp:						
Holdrege	3	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Kr:						
Krier	9W	Well suited	Well suited	Well suited	Well suited	High Salinity Soil reaction

CONSERVATION TREE AND SHRUB MANAGEMENT
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. Pines and spruces are prone to disease problems. See text for further explanation of ratings in this table.)

Map symbol and soil name	Windbreak Group	Suitability for hand planting	Suitability for mechanical planting	Suitability for mechanical site preparation (surface)	Suitability for mechanical site preparation (deep)	Potential for seedling mortality
		Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
Lh:						
Lancaster	6D	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Hedville	10	Well suited	Moderately suited Slope Rock fragments	Well suited	Well suited	Low
Ln:						
Lincoln	1K	Well suited	Well suited	Well suited	Well suited	Moderate Soil reaction
M-W:						
Miscellaneous Water-		Not rated	Not rated	Not rated	Not rated	Not rated
Na:						
Naron	5	Well suited	Well suited	Well suited	Well suited	Low
Nb:						
Naron	5	Well suited	Well suited	Well suited	Well suited	Low
Ne:						
Ness	10	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	High Wetness
Nw:						
New Cambria	1K	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
Oe:						
Owens		Moderately suited Stickiness	Poorly suited Slope Stickiness	Poorly suited Slope Stickiness	Poorly suited Slope	Low
Pe:						
Plevna	2	Well suited	Well suited	Well suited	Unsuited Wetness	High Wetness
Pr:						
Pratt	7	Well suited	Well suited	Well suited	Well suited	Low
Ps:						
Pratt	7	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Pt:						
Pratt	7	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Tivoli	7	Moderately suited Sandiness	Moderately suited Slope Sandiness	Well suited	Well suited	Low
Qw:						
Quinlan	10	Well suited	Poorly suited Slope	Poorly suited Slope	Poorly suited Slope	Moderate Soil reaction
Woodward	8	Well suited	Moderately suited Slope	Well suited	Well suited	Low
SAP:						
Sand Pit		Not rated	Not rated	Not rated	Not rated	Not rated
Sh:						
Shellabarger	5	Well suited	Well suited	Well suited	Well suited	Low
Th:						
Tivoli	7	Moderately suited Sandiness	Poorly suited Slope Sandiness	Poorly suited Slope	Poorly suited Slope	Low
To:						
Tobin	1	Well suited	Well suited	Well suited	Well suited	Low
Ts:						
Tobin	1	Well suited	Well suited	Well suited	Well suited	Low
Uc:						
Uly	3	Well suited	Moderately suited Slope	Well suited	Well suited	Low
W:						
Water		Unsuited Horizon table contains no data	Unsuited Horizon table contains no data	Unsuited Horizon table contains no data	Unsuited Horizon table contains no data	High Horizon table contains no data
Wa:						
Waldeck	1K	Well suited	Well suited	Well suited	Well suited	Moderate Soil reaction

ENGINEERING INDEX PROPERTIES
Kiowa County, Kansas

Engineering Index Properties table gives the engineering classifications and the range of index properties for the layers of each soil in the survey area. Depth to the upper and lower boundaries of each layer is indicated. Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. Loam, for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, gravelly. Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM, 1998) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 1998). The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle−size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL−ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A−1 through A−7 on the basis of particle−size distribution, liquid limit, and plasticity index. Soils in group A−1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A−7 are fine grained. Highly organic soils are classified in group A−8 on the basis of visual inspection. If laboratory data are available, the A−1, A−2, and A−7 groups are further classified as A−1−a, A−1−b, A−2−4, A−2−5, A−2−6, A−2−7, A−7−5, or A−7−6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in Engineering Index Properties table.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry−weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. The estimates of particle−size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is generally omitted in the table.

ENGINEERING INDEX PROPERTIES--Continued
Kiowa County, Kansas

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
007CF:												
Clairemont-----	0-14	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	98-100	85-100	60-90	20-35	4-17
	14-60	Silty clay loam	CL, CL-ML	A-4, A-6	0	0	100	98-100	95-100	65-95	20-40	4-20
025AB:												
Albion---------	0-8	Sandy loam	ML, SM	A-2, A-4	0	0	100	75-100	60-90	25-55	15-30	NP-5
	8-15	Sandy loam	ML, SM	A-2, A-4	0	0	85-100	75-100	45-90	30-55	20-35	NP-10
	15-22	Coarse sandy loam	SM	A-1, A-2	0	0	85-100	75-90	40-70	15-30	15-30	NP-5
	22-60	Gravelly sand	GM, GP-GM, SM, SP-SM	A-1, A-2, A-3	0	0-5	40-100	40-90	30-70	5-30	15-30	NP-5
Shellabarger---	0-10	Sandy loam	ML, SM	A-2, A-4	0	0	95-100	95-100	75-100	30-55	15-30	NP-5
	10-60	Sandy clay loam	SC	A-4, A-6	0	0	95-100	85-100	70-90	35-50	25-40	8-20
	60-64	Coarse sandy loam	SC, SC-SM, SM, SP-SM	A-2, A-4	0	0	80-100	70-100	50-80	10-40	15-30	NP-10
025PG:												
Penden---------	0-16	Clay loam	CL	A-6, A-7-6	0	0	100	100	85-100	65-95	30-45	11-25
	16-28	Clay loam	CL	A-6, A-7-6	0	0	100	100	85-100	60-90	30-45	11-25
	28-60	Clay loam	CL	A-6, A-7-6	0	0	100	100	75-100	55-75	30-45	11-25
025SH:												
Shellabarger---	0-11	Loam	CL	A-4, A-6	0	0	95-100	95-100	80-95	55-75	25-35	7-15
	11-29	Sandy clay loam	SC	A-4, A-6	0	0	95-100	85-100	70-90	35-50	25-40	8-20
	29-60	Coarse sandy loam	SC, SC-SM, SM, SP-SM	A-2, A-4	0	0	80-100	70-100	50-80	10-40	15-30	NP-10
033AC:												
Abilene--------	0-8	Silt loam	CL	A-4, A-6	0	0	98-100	96-100	90-100	60-96	25-35	8-16
	8-35	Clay	CH, CL	A-6, A-7	0	0	98-100	96-100	90-100	75-95	34-58	22-40
	35-60	Clay loam	CL	A-6, A-7	0	0	90-100	88-100	80-98	60-95	35-50	19-32
033CK:												
Case-----------	0-8	Clay loam	CL	A-6	0	0	90-100	90-100	85-100	55-85	30-40	10-20
	8-60	Clay loam	CL	A-6, A-7-6	0	0	90-100	90-100	85-100	55-85	25-45	10-25
033CS:												
Clark----------	0-10	Clay loam	CL	A-6	0	0	100	95-100	90-100	50-90	30-40	10-20
	10-60	Clay loam	CL	A-6	0	0	100	95-100	90-100	55-90	25-40	10-25
033CT:												
Clark----------	0-10	Clay loam	CL	A-6	0	0	100	95-100	90-100	50-90	30-40	10-20
	10-60	Clay loam	CL	A-6	0	0	100	95-100	90-100	55-90	25-40	10-25
033ED:												
Elandco--------	0-31	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-95	20-40	4-20
	31-60	Silt loam	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	65-95	20-45	4-25
033EF:												
Elandco--------	0-31	Silt loam	ML, CL-ML, CL	A-4, A-6	0	0	100	100	95-100	85-95	20-40	4-20
	31-60	Silt loam	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	65-95	20-45	4-25
033KC:												
Kanza----------	0-10	Loamy fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	90-100	5-35	---	NP
	10-60	Sand	SM, SP-SM	A-2, A-3	0	0	90-100	90-100	80-100	5-35	---	NP
033LN:												
Lincoln--------	0-10	Loamy sand	SM	A-2	0	0	100	98-100	90-100	15-35	---	NP
	10-60	Stratified fine sand to clay loam	SM, SP-SM	A-2, A-3	0	0	100	98-100	82-100	5-35	---	NP
033QR:												
Quinlan--------	0-14	Loam	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	90-100	51-97	15-37	NP-14
	>14	Weathered bedrock			---	---	---	---	---	---	---	---
Woodward-------	0-30	Loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	51-95	15-31	NP-12
	>30	Weathered bedrock			---	---	---	---	---	---	---	---
033SH:												
Shellabarger---	0-11	Sandy loam	SM, ML	A-2, A-4	0	0	95-100	95-100	75-100	30-55	15-30	NP-5
	11-38	Sandy clay loam	SC	A-4, A-6	0	0	95-100	85-100	70-90	35-50	25-40	8-20
	38-60	Coarse sandy loam	SC, SC-SM, SM, SP-SM	A-2, A-4	0	0	80-100	70-100	50-80	10-40	15-30	NP-10
033SM:												
Shellabarger---	0-11	Sandy loam	ML, SM	A-2, A-4	0	0	95-100	95-100	75-100	30-55	15-30	NP-5
	11-38	Sandy clay loam	SC	A-4, A-6	0	0	95-100	85-100	70-90	35-50	25-40	8-20
	38-60	Coarse sandy loam	SP-SM, SM, SC-SM, SC	A-2, A-4	0	0	80-100	70-100	50-80	10-40	15-30	NP-10
047PA:												
Platte---------	0-9	Loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	85-100	60-95	22-35	4-15
	9-60	Coarse sand	SM, SP-SM	A-1, A-2, A-3	0	0	70-95	50-95	25-65	5-15	15-20	NP
047WA:												
Waldeck--------	0-10	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0	0	100	95-100	75-100	25-55	15-25	NP-5
	10-28	Sandy loam	SC-SM, SM	A-2, A-4	0	0	100	95-100	70-100	30-50	15-25	NP-5
	28-60	Sand	SP-SM, SM, SP	A-3, A-1, A-2	0	0	90-100	80-100	40-60	1-35	---	NP
057HD:												
Holdrege-------	0-11	Very fine sandy loam	CL-ML, ML	A-4	0	0	100	100	95-100	85-100	15-25	NP-5
	11-33	Silty clay loam	CH, CL	A-6, A-7	0	0	100	100	98-100	90-100	30-55	15-35
	33-48	Silty clay loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	9-17
	48-66	Silt loam	CL, ML	A-4, A-6	0	0	100	100	95-100	90-100	30-40	5-15
057PR:												
Pratt----------	0-9	Loamy fine sand	SM	A-2	0	0	100	95-100	70-100	15-35	---	NP
	9-28	Loamy fine sand	SC-SM, SM	A-2, A-4	0	0	100	95-100	90-100	15-40	15-20	NP-6
	28-54	Loamy fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	80-100	5-35	---	NP

ENGINEERING INDEX PROPERTIES--Continued
Kiowa County, Kansas

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
057PT:												
Pratt----------	0-9	Loamy fine sand	SM	A-2	0	0	100	95-100	70-100	15-35	---	NP
	9-28	Loamy fine sand	SC-SM, SM	A-2, A-4	0	0	100	95-100	90-100	15-40	15-20	NP-6
	28-54	Loamy fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	80-100	5-35	---	NP
Tivoli---------	0-6	Loamy fine sand	SM	A-2	0	0	100	95-100	90-100	15-35	---	NP
	6-60	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	80-100	5-25	---	NP
057TV:												
Tivoli---------	0-6	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	80-100	5-25	---	NP
	6-60	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	80-100	5-25	---	NP
151BC:												
Blanket--------	0-13	Silty clay loam	CH, CL	A-6, A-7	0	0	98-100	96-100	90-100	70-98	36-62	16-38
	13-46	Silty clay	CH, CL	A-7	0	0	98-100	96-100	85-100	70-90	41-64	20-38
	46-60	Silty clay loam	CH, CL	A-6, A-7	0	0	85-100	80-100	80-100	51-85	30-60	15-38
151BH:												
Blanket--------	0-13	Silt loam	CL	A-6	0	0	98-100	96-100	85-100	65-95	28-40	11-20
	13-46	Silty clay	CH, CL	A-7	0	0	98-100	96-100	85-100	70-90	41-64	20-38
	46-60	Silty clay loam	CH, CL	A-6, A-7	0	0	85-100	80-100	80-100	51-85	30-60	15-38
151FE:												
Farnum---------	0-11	Fine sandy loam	ML, SM	A-2, A-4	0	0	100	100	70-100	30-55	15-30	NP-5
	11-41	Clay loam	CL, SC	A-6, A-7-6	0	0	100	100	70-100	45-80	35-50	15-30
	41-60	Fine sandy loam	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0	0	100	95-100	65-100	30-80	20-35	5-15
151NM:												
Naron----------	0-11	Loam	CL-ML, ML	A-4	0	0	100	95-100	75-100	50-60	15-26	1-7
	11-38	Fine sandy loam	CL, SC	A-4, A-6	0	0	100	95-100	80-100	36-60	26-40	8-18
	38-60	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	100	95-100	75-100	20-50	15-26	NP-7
151SE:												
Shellabarger---	0-11	Fine sandy loam	ML, SM, CL-ML	A-2, A-4	0	0	95-100	95-100	75-100	30-55	15-30	NP-5
	11-34	Sandy clay loam	SC	A-4, A-6	0	0	95-100	85-100	70-90	35-50	25-40	8-20
	34-60	Coarse sandy loam	SC, SC-SM, SM, SP-SM	A-2, A-4	0	0	80-100	70-100	50-80	10-40	15-30	NP-10
1324:												
Carway---------	0-7	Fine sandy loam	SC, CL	A-2-6, A-6	0	0	100	100	80-95	30-55	20-30	10-15
	7-10	Sandy clay loam	SC, CL	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	10-15	Sandy clay loam	SC, CL	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	15-22	Fine sandy loam	SC, CL	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	22-35	Fine sandy loam	SC, CL	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	35-40	Clay loam	CL, CH	A-7-6	0	0	100	100	90-100	85-99	45-60	25-40
	40-54	Clay loam	CL, CH	A-7-6	0	0	100	100	90-100	85-99	45-60	25-40
	54-63	Clay loam	CL, CH	A-7-6	0	0	100	100	90-100	85-99	45-60	25-40
	63-72	Clay loam	CL, CH	A-7-6	0	0	100	100	90-100	85-99	45-60	25-40
	72-80	Clay loam	SC, CL	A-6	0	0	100	100	75-90	45-60	25-35	10-15
Carbika--------	0-11	Silt loam	SC-SM, SM	A-2-4, A-4	0	0	100	100	90-100	30-45	20-30	1-7
	11-15	Clay	CH, CL	A-7-6	0	0	100	100	90-100	85-99	45-55	30-35
	15-22	Clay loam	CH, CL	A-7-6	0	0	100	100	90-100	85-99	45-55	30-35
	22-34	Clay loam	CL, SC	A-4, A-6	0	0	100	100	85-100	45-60	30-35	10-15
	34-41	Clay loam	CL, SC	A-4, A-6	0	0	100	100	85-100	45-60	30-35	10-15
	41-60	Clay loam	CL, SC	A-4, A-6	0	0	100	100	85-100	45-60	30-35	10-15
	60-80	Clay loam	CL, SC	A-4, A-6	0	0	100	100	85-100	45-60	30-35	10-15
1725:												
Farnum---------	0-5	Loam	CL-ML, CL	A-4, A-6	0	0	100	100	90-100	60-85	20-35	5-15
	5-15	Loam	CL-ML, CL	A-4, A-6	0	0	100	100	90-100	60-85	20-35	5-15
	15-21	Loam	CL	A-6	0	0	100	100	85-100	60-80	30-40	10-15
	21-34	Sandy clay loam	SC, CL	A-6, A-7-6	0	0	100	100	70-100	45-80	35-50	15-30
	34-48	Loam	SC, CL	A-6, A-7-6	0	0	100	100	70-100	45-80	35-50	15-30
	48-61	Clay loam	SC, CL	A-6, A-7-6	0	0	100	100	70-100	45-80	35-50	15-30
	61-73	Clay loam	SC, CL	A-6, A-7-6	0	0	100	100	70-100	45-80	35-50	15-30
	73-80	Loam	SC, CL, SC-SM, CL-ML	A-2, A-4, A-6	0	0	100	95-100	65-100	30-80	20-35	5-15
Funmar---------	0-6	Loam	CL-ML, CL	A-4, A-6	0	0	100	100	85-100	60-85	25-35	5-15
	6-12	Loam	CL-ML, CL	A-4, A-6	0	0	100	100	85-100	60-85	25-35	5-15
	12-17	Loam	CL, ML	A-6, A-4, A-7-6	0	0	100	100	85-100	60-80	30-45	7-20
	17-26	Clay loam	CL, ML	A-6, A-4, A-7-6	0	0	100	100	85-100	60-80	30-45	7-20
	26-32	Loam	CL, ML	A-6, A-4, A-7-6	0	0	100	100	85-100	60-80	30-45	7-20
	32-38	Silty clay loam	CL	A-6, A-7-6	0	0	100	100	90-100	75-100	40-50	20-30
	38-54	Silty clay loam	CL, CH	A-7-6	0	0	100	100	90-100	85-100	45-60	25-35
	54-66	Silty clay loam	CL, CH	A-7-6	0	0	100	100	90-100	85-100	45-60	25-35
	66-80	Silty clay loam	CL, CH	A-7-6	0	0	100	100	90-100	85-100	45-60	25-35

ENGINEERING INDEX PROPERTIES--Continued
Kiowa County, Kansas

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
1726:												
Farnum---------	0-5	Loam	CL-ML, CL	A-6, A-4	0	0	100	100	90-100	60-85	20-35	5-15
	5-15	Loam	CL-ML, CL	A-4, A-6	0	0	100	100	90-100	60-85	20-35	5-15
	15-21	Loam	CL	A-6	0	0	100	100	85-100	60-80	30-40	10-15
	21-34	Sandy clay loam	SC, CL	A-6, A-7-6	0	0	100	100	70-100	45-80	35-50	15-30
	34-48	Loam	SC, CL	A-6, A-7-6	0	0	100	100	70-100	45-80	35-50	15-30
	48-61	Clay loam	SC, CL	A-6, A-7-6	0	0	100	100	70-100	45-80	35-50	15-30
	61-73	Clay loam	SC, CL	A-6, A-7-6	0	0	100	100	70-100	45-80	35-50	15-30
	73-80	Loam	SC, CL, SC-SM, CL-ML	A-2, A-4, A-6	0	0	100	95-100	65-100	30-80	20-35	5-15
Funmar---------	0-6	Loam	CL-ML, CL	A-4, A-6	0	0	100	100	85-100	60-85	25-35	5-15
	6-12	Loam	CL-ML, CL	A-4, A-6	0	0	100	100	85-100	60-85	25-35	5-15
	12-17	Loam	CL, ML	A-6, A-4, A-7-6	0	0	100	100	85-100	60-80	30-45	7-20
	17-26	Clay loam	CL, ML	A-6, A-4, A-7-6	0	0	100	100	85-100	60-80	30-45	7-20
	26-32	Loam	CL, ML	A-6, A-4, A-7-6	0	0	100	100	85-100	60-80	30-45	7-20
	32-38	Silty clay loam	CL	A-6, A-7-6	0	0	100	100	90-100	75-100	40-50	20-30
	38-54	Silty clay loam	CL, CH	A-7-6	0	0	100	100	90-100	85-100	45-60	25-35
	54-66	Silty clay loam	CL, CH	A-7-6	0	0	100	100	90-100	85-100	45-60	25-35
	66-80	Silty clay loam	CL, SC	A-7-6	0	0	100	100	90-100	85-100	45-60	25-35
1985:												
Hayes----------	0-8	Fine sandy loam	SC-SM	A-2-4, A-4	0	0	100	100	80-95	30-49	20-25	4-7
	8-14	Fine sandy loam	SC, SC-SM, SM, CL-ML	A-2-4, A-4	0	0	100	100	80-95	30-55	21-28	3-10
	14-23	Fine sandy loam	SC, SC-SM, SM, CL-ML	A-4, A-2-4	0	0	100	100	80-95	30-55	21-28	3-10
	23-34	Fine sandy loam	SC, SC-SM, SM, CL-ML	A-2-4, A-4	0	0	100	100	80-95	30-55	21-28	3-10
	34-42	Fine sandy loam	SC, SC-SM, SM, CL-ML	A-2-4, A-4	0	0	100	100	80-95	30-55	21-28	3-10
	42-47	Fine sandy loam	SC, SC-SM, SM, CL-ML	A-2-4, A-4	0	0	100	100	80-95	30-55	21-28	3-10
	47-56	Sandy clay loam	CL	A-6	0	0	100	100	80-100	60-85	30-35	11-15
	56-69	Silty clay	CL, CH	A-7-6	0	0	100	100	90-100	85-99	45-55	25-35
	69-80	Clay loam	CL, CH	A-7-6	0	0	100	100	90-100	85-99	45-55	25-35
1986:												
Hayes----------	0-8	Loamy fine sand	SM	A-2	0	0	100	100	75-95	15-30	0-0	NP
	8-14	Fine sandy loam	SC, SC-SM, SM, CL-ML	A-2-4, A-4	0	0	100	100	80-95	30-55	21-28	3-10
	14-23	Fine sandy loam	SC, SC-SM, SM, CL-ML	A-2-4, A-4	0	0	100	100	80-95	30-55	21-28	3-10
	23-34	Fine sandy loam	SC, SC-SM, SM, CL-ML	A-2-4, A-4	0	0	100	100	80-95	30-55	21-28	3-10
	34-42	Fine sandy loam	SC, SC-SM, SM, CL-ML	A-2-4, A-4	0	0	100	100	80-95	30-55	21-28	3-10
	42-47	Fine sandy loam	SC, SC-SM, SM, CL-ML	A-2-4, A-4	0	0	100	100	80-95	30-55	21-28	3-10
	47-56	Sandy clay loam	CL	A-6	0	0	100	100	80-100	60-85	30-35	11-15
	56-69	Silty clay	CL, CH	A-7-6	0	0	100	100	90-100	85-99	45-55	25-35
	69-80	Clay loam	CL, CH	A-7-6	0	0	100	100	90-100	85-99	45-55	25-35
Solvay---------	0-5	Loamy fine sand	SC-SM, SM	A-2-4	0	0	100	100	85-100	15-30	10-20	NP-5
	5-14	Fine sandy loam	SC, CL	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	14-23	Fine sandy loam	CL, SC	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	23-37	Fine sandy loam	SC, CL	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	37-58	Fine sandy loam	CL, CL-ML, SC, SC-SM	A-4	0	0	100	100	55-100	20-52	20-30	5-10
	58-76	Loamy fine sand	CL, CL-ML, SC, SC-SM	A-4	0	0	100	100	55-100	20-52	20-30	5-10
	76-80	Loamy fine sand	CL-ML, SC-SM, SC, CL	A-4	0	0	100	100	55-100	20-52	20-30	5-10
1988:												
Hayes----------	0-8	Fine sandy loam	SC-SM, SM, CL-ML	A-2-4, A-4	0	0	100	100	80-95	30-55	20-25	4-7
	8-14	Fine sandy loam	SC, SC-SM, SM, CL-ML	A-2-4, A-4	0	0	100	100	80-95	30-55	21-28	3-10
	14-23	Fine sandy loam	SC, SC-SM, SM, CL-ML	A-2-4, A-4	0	0	100	100	80-95	30-55	21-28	3-10
	23-34	Fine sandy loam	SC, SC-SM, SM, CL-ML	A-2-4, A-4	0	0	100	100	80-95	30-55	21-28	3-10
	34-42	Fine sandy loam	SC, SC-SM, SM, CL-ML	A-2-4, A-4	0	0	100	100	80-95	30-55	21-28	3-10
	42-47	Fine sandy loam	SC, SC-SM, SM, CL-ML	A-2-4, A-4	0	0	100	100	80-95	30-55	21-28	3-10
	47-56	Sandy clay loam	CL	A-6	0	0	100	100	80-100	60-85	30-35	11-15
	56-69	Silty clay	CL, CH	A-7-6	0	0	100	100	90-100	85-99	45-55	25-35
	69-80	Clay loam	CL, CH	A-7-6	0	0	100	100	90-100	85-99	45-55	25-35
2556:												
Langdon--------	0-8	Fine sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	80-100	5-25	0-0	NP
	8-47	Stratified sand to loamy sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	80-100	5-25	0-0	NP
	47-64	Fine sand	SP-SM, SM	A-2-4, A-3	0	0	100	100	80-100	5-20	0-0	NP
	64-80	Stratified sand to loamy sand	SP-SM, SM	A-2-4, A-3	0	0	100	100	80-100	5-25	0-0	NP

ENGINEERING INDEX PROPERTIES--Continued
Kiowa County, Kansas

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
3512:												
Saltcreek------	0-5	Fine sandy loam	CL-ML, SM, ML, SC-SM	A-2-4, A-4	0	0	100	100	80-95	30-55	20-30	1-7
	5-10	Sandy clay loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0	100	100	80-95	30-55	20-30	1-7
	10-26	Sandy clay loam	CL, SC	A-6	0	0	100	100	85-100	45-60	25-35	10-20
	26-39	Fine sandy loam	CL, SC	A-6	0	0	100	100	85-100	45-60	25-35	10-20
	39-56	Silty clay	CH, CL	A-7-6	0	0	100	100	90-100	85-99	45-55	25-35
	56-66	Silty clay loam	CL, CH	A-7-6	0	0	100	100	90-100	85-99	45-55	25-35
	66-80	Silty clay loam	CH, CL	A-7-6	0	0	100	100	90-100	85-99	45-55	25-35
Naron----------	0-8	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-2, A-4	0	0	100	100	60-85	30-55	0-25	NP-7
	8-14	Fine sandy loam	ML, SC-SM, CL-ML, SM	A-2, A-4	0	0	100	100	60-85	30-55	0-25	NP-7
	14-28	Sandy clay loam	CL, SC	A-6	0	0	100	100	60-90	35-55	30-35	10-15
	28-39	Sandy clay loam	SC, CL	A-6	0	0	100	100	60-90	35-55	30-35	10-15
	39-55	Sandy clay loam	SC, CL	A-6	0	0	100	100	60-90	35-55	30-35	10-15
	55-66	Fine sandy loam	SC, SC-SM, SM	A-2, A-4	0	0	100	100	60-90	20-50	0-25	NP-10
	66-80	Loamy fine sand	SC, SM, SC-SM	A-2, A-4	0	0	100	100	60-90	20-50	0-25	NP-10
3540:												
Solvay---------	0-5	Loamy fine sand	SC-SM, SM	A-2-4	0	0	100	100	85-100	15-30	10-20	NP-5
	5-14	Fine sandy loam	CL, SC	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	14-23	Fine sandy loam	SC, CL	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	23-37	Fine sandy loam	CL, SC	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	37-58	Fine sandy loam	CL, CL-ML, SC, SC-SM	A-4	0	0	100	100	55-100	20-52	20-30	5-10
	58-76	Loamy fine sand	SC-SM, SC, CL-ML, CL	A-4	0	0	100	100	55-100	20-52	20-30	5-10
	76-80	Loamy fine sand	CL, CL-ML, SC, SC-SM	A-4	0	0	100	100	55-100	20-52	20-30	5-10
3640:												
Tivin----------	0-7	Fine sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	90-100	5-25	0-0	NP
	7-18	Fine sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	80-100	5-25	0-0	NP
	18-80	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	100	80-100	5-25	0-0	NP
An:												
Albion---------	0-11	Sandy loam	ML, SM	A-2, A-4	0	0	100	75-100	60-90	25-55	15-30	NP-5
	11-24	Sandy loam	ML, SM	A-2, A-4	0	0	85-100	75-100	45-90	30-55	20-35	NP-10
	24-60	Sand	SM, SP-SM, GM, GP-GM	A-1, A-2, A-3	0	0-5	40-100	40-90	30-70	5-30	15-30	NP-5
As:												
Albion---------	0-11	Sandy loam	ML, SM	A-2, A-4	0	0	100	75-100	60-90	25-55	15-30	NP-5
	11-24	Sandy loam	ML, SM	A-2, A-4	0	0	85-100	75-100	45-90	30-55	20-35	NP-10
	24-60	Sand	GM, GP-GM, SM, SP-SM	A-1, A-2, A-3	0	0-5	40-100	40-90	30-70	5-30	15-30	NP-5
Shellabarger---	0-12	Sandy loam	ML, SM	A-2, A-4	0	0	95-100	95-100	75-100	30-55	15-30	NP-5
	12-60	Sandy clay loam	SC	A-4, A-6	0	0	95-100	85-100	70-90	35-50	25-40	8-20
At:												
Attica---------	0-10	Loamy fine sand	SM, SP-SM	A-2	0	0	100	95-100	70-100	10-35	---	NP
	10-30	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0	0	100	95-100	75-100	30-55	15-26	NP-7
	30-60	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	85-100	80-100	70-100	20-50	15-26	NP-7
Ax:												
Attica---------	0-10	Loamy fine sand	SM, SP-SM	A-2	0	0	100	95-100	70-100	10-35	---	NP
	10-30	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0	0	100	95-100	75-100	30-55	15-26	NP-7
	30-60	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	85-100	80-100	70-100	20-50	15-26	NP-7
Carwile--------	0-15	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0	0	100	98-100	90-100	36-60	15-26	NP-7
	15-36	Clay	CH, CL, SC	A-6, A-7	0	0	100	100	90-100	40-95	35-70	14-38
	36-60	Clay	CH, CL, SC	A-4, A-6, A-7	0	0	100	100	90-100	36-95	25-70	7-38
BOP:												
Borrow Pits----	---	---	---	---	---	---	---	---	---	---	---	---
Ca:												
Canadian-------	0-14	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	100	98-100	94-100	36-65	15-26	NP-7
	14-30	Fine sandy loam	CL, ML, SC, SM	A-4	0	0	100	98-100	94-100	36-85	15-31	NP-10
	30-60	Fine sandy loam	CL, ML, SC, SM	A-2, A-4	0	0	100	98-100	90-100	15-85	15-31	NP-10
Cc:												
Carwile--------	0-15	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0	0	100	98-100	90-100	36-60	15-26	NP-7
	15-36	Clay	CH, CL, SC	A-6, A-7	0	0	100	100	90-100	40-95	35-70	14-38
	36-60	Clay	CH, CL, SC	A-4, A-6, A-7	0	0	100	100	90-100	36-95	25-70	7-38
Ce:												
Case-----------	0-6	Clay loam	CL	A-6	0	0	90-100	90-100	85-100	55-85	30-40	10-20
	6-60	Clay loam	CL	A-6, A-7-6	0	0	90-100	90-100	85-100	55-85	25-45	10-25
Cf:												
Case-----------	0-6	Clay loam	CL	A-6	0	0	90-100	90-100	85-100	55-85	30-40	10-20
	6-60	Clay loam	CL	A-6, A-7-6	0	0	90-100	90-100	85-100	55-85	25-45	10-25
Cg:												
Case-----------	0-6	Clay loam	CL	A-6	0	0	90-100	90-100	85-100	55-85	30-40	10-20
	6-60	Clay loam	CL	A-6, A-7-6	0	0	90-100	90-100	85-100	55-85	25-45	10-25
Canlon---------	0-5	Loam	CL, CL-ML	A-4, A-6	0	0	90-100	75-100	65-100	50-90	20-40	4-20
	5-14	Loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	75-100	55-100	50-95	35-85	20-40	4-20
	>14	Unweathered bedrock			---	---	---	---	---	---	---	---

ENGINEERING INDEX PROPERTIES--Continued
Kiowa County, Kansas

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
Ck:												
Clark----------	0-5	Loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	50-90	20-40	5-20
	5-60	Clay loam	CL	A-6	0	0	100	95-100	90-100	55-90	25-40	10-25
Cm:												
Clark----------	0-10	Loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	50-90	20-40	5-20
	10-60	Clay loam	CL	A-6	0	0	100	95-100	90-100	55-90	25-40	10-25
Co:												
Coly-----------	0-5	Silt loam	CL, CL-ML, ML	A-4, A-6, A-7	0	0	100	100	85-100	85-100	20-45	2-20
	5-60	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	85-100	85-100	20-40	2-15
Cp:												
Coly-----------	0-5	Silt loam	CL, CL-ML, ML	A-4, A-6, A-7	0	0	100	100	85-100	85-100	20-45	2-20
	5-60	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	85-100	85-100	20-40	2-15
Ct:												
Coly-----------	0-5	Silt loam	CL, CL-ML, ML	A-4, A-6, A-7	0	0	100	100	85-100	85-100	20-45	2-20
	5-60	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	85-100	85-100	20-40	2-15
Tobin----------	0-25	Silt loam	CL	A-6	0	0	100	100	90-100	70-90	30-35	10-15
	25-32	Silt loam	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-45	10-20
	32-60	Silt loam	CL	A-6, A-7	0	0	100	100	85-100	70-95	30-45	10-20
Da:												
Dale-----------	0-16	Silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	65-98	25-35	5-15
	16-60	Silty clay loam	CL	A-4, A-6, A-7	0	0	95-100	95-100	90-100	65-98	30-43	8-20
Fa:												
Farnum---------	0-11	Loam	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	60-85	20-35	5-15
	11-54	Clay loam	CL, SC	A-6, A-7-6	0	0	100	100	70-100	45-80	35-50	15-30
	54-60	Clay loam	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0	0	100	95-100	65-100	30-80	20-35	5-15
Fb:												
Farnum---------	0-11	Loam	CL, CL-ML	A-6, A-4	0	0	100	100	90-100	60-85	20-35	5-15
	11-51	Clay loam	CL, SC	A-6, A-7-6	0	0	100	100	70-100	45-80	35-50	15-30
	51-60	Clay loam	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0	0	100	95-100	65-100	30-80	20-35	5-15
Ha:												
Harney---------	0-5	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	85-100	25-40	5-20
	5-28	Silty clay loam	CH, CL	A-7-6	0	0	100	100	95-100	85-100	40-60	15-35
	28-60	Silt loam	CL	A-6, A-7-6	0	0	100	100	95-100	85-100	30-45	10-20
Hb:												
Harney---------	0-5	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	85-100	25-40	5-20
	5-28	Silty clay loam	CH, CL	A-7-6	0	0	100	100	95-100	85-100	40-60	15-35
	28-60	Silty clay loam	CL	A-6, A-7-6	0	0	100	100	95-100	85-100	30-45	10-20
He:												
Hedville-------	0-11	Fine sandy loam	SC, SC-SM, SM	A-1-b, A-2, A-4, A-6	---	0-15	80-100	75-100	45-70	20-40	15-35	NP-13
	11-15	Cobbly loam	CL, ML, SC, SM	A-1-b, A-2, A-4, A-6	---	0-15	60-90	50-85	30-80	15-60	15-35	NP-13
	>15	Unweathered bedrock			---	---	---	---	---	---	---	---
Rock Outcrop---	---	---	---	---	---	---	---	---	---	---	---	---
Ho:												
Holdrege-------	0-10	Silt loam	CL, CL-ML, ML	A-4, A-6, A-7	0	0	100	100	95-100	85-100	20-45	2-20
	10-27	Silty clay loam	CH, CL	A-6, A-7	0	0	100	100	98-100	90-100	30-55	15-35
	27-32	Silty clay loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	9-17
	32-60	Silt loam	CL, ML	A-4, A-6	0	0	100	100	95-100	90-100	30-40	5-15
Hp:												
Holdrege-------	0-10	Silt loam	CL, CL-ML, ML	A-4, A-6, A-7	0	0	100	100	95-100	85-100	20-45	2-20
	10-27	Silty clay loam	CH, CL	A-6, A-7	0	0	100	100	98-100	90-100	30-55	15-35
	27-32	Silty clay loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	9-17
	32-60	Silt loam	CL, ML	A-4, A-6	0	0	100	100	95-100	90-100	30-40	5-15
Kr:												
Krier----------	0-5	Sandy loam	SM	A-2, A-4	0	0	100	95-100	70-100	20-50	15-20	NP-4
	5-11	Sandy loam	CL, CL-ML, SC-SM, SM	A-2, A-4, A-6	0	0	100	95-100	70-100	20-85	20-40	2-20
	11-60	Sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	55-75	5-35	---	NP
Lh:												
Lancaster------	0-13	Loam	CL, CL-ML	A-4, A-6	---	0-5	95-100	90-100	85-100	60-90	20-35	5-15
	13-23	Loam	CL, CL-ML, SC, SC-SM	A-4, A-6	---	0-10	95-100	90-100	80-100	36-80	20-35	5-15
	>23	Weathered bedrock			---	---	---	---	---	---	---	---
Hedville-------	0-11	Fine sandy loam	SC, SC-SM, SM	A-1-b, A-2, A-4, A-6	---	0-15	80-100	75-100	45-70	20-40	15-35	NP-13
	11-15	Cobbly loam	CL, ML, SC, SM	A-1-b, A-2, A-4, A-6	---	0-15	60-90	50-85	30-80	15-60	15-35	NP-13
	>15	Unweathered bedrock			---	---	---	---	---	---	---	---
Ln:												
Lincoln--------	0-8	Sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	100	98-100	94-100	36-60	15-24	NP-7
	8-60	Stratified fine sand to loamy fine sand	SM, SP-SM	A-2, A-3	0	0	100	98-100	82-100	5-35	---	NP
M-W:												
Miscellaneous Water----------	---	---	---	---	---	---	---	---	---	---	---	---
Na:												
Naron----------	0-10	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0	0	100	95-100	75-100	25-60	15-26	1-7
	10-48	Sandy clay loam	CL, SC	A-4, A-6	0	0	100	95-100	80-100	36-60	26-40	8-18
	48-60	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	100	95-100	75-100	20-50	15-26	NP-7

ENGINEERING INDEX PROPERTIES--Continued
Kiowa County, Kansas

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Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
Nb:												
Naron----------	0-10	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0	0	100	95-100	75-100	25-60	15-26	1-7
	10-48	Sandy clay loam	CL, SC	A-4, A-6	0	0	100	95-100	80-100	36-60	26-40	8-18
	48-60	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	100	95-100	75-100	20-50	15-26	NP-7
Ne:												
Ness----------	0-38	Silty clay	CH	A-7-6	0	0	100	100	95-100	90-100	50-70	30-45
	38-60	Silty clay loam	CH, CL, MH	A-4, A-6, A-7-6	0	0	100	100	95-100	90-100	30-55	8-30
Nw:												
New Cambria----	0-12	Silty clay	CH	A-7-6	0	0	100	100	95-100	90-100	50-75	30-45
	12-36	Silty clay	CH	A-7-6	0	0	100	100	95-100	85-100	50-75	25-45
	36-60	Silty clay	CH, CL	A-7-6	0	0	100	100	95-100	85-100	40-60	20-40
Oe:												
Owens----------	0-6	Clay	CH, CL	A-7-6	---	0-5	95-100	95-100	85-100	75-95	45-60	20-35
	6-15	Clay	CH, CL	A-7-6	---	0-5	95-100	95-100	85-100	75-95	45-70	20-40
	>15	Weathered bedrock			---	---	---	---	---	---	---	---
Pe:												
Plevna---------	0-9	Loam	CL-ML, ML	A-4	0	0	100	95-100	70-100	50-60	15-26	NP-6
	9-48	Sandy loam	SC-SM, SM	A-2, A-4	0	0	100	95-100	70-100	30-50	15-26	NP-6
	48-60	Sand	SM, SP	A-2, A-3	0	0	100	90-100	50-90	4-35	---	NP
Pr:												
Pratt----------	0-12	Loamy fine sand	SM	A-2	0	0	100	95-100	70-100	15-35	---	NP
	12-36	Loamy fine sand	SC-SM, SM	A-2, A-4	0	0	100	95-100	90-100	15-40	15-20	NP-6
	36-60	Loamy fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	80-100	5-35	---	NP
Ps:												
Pratt----------	0-12	Loamy fine sand	SM	A-2	0	0	100	95-100	70-100	15-35	---	NP
	12-36	Loamy fine sand	SC-SM, SM	A-2, A-4	0	0	100	95-100	90-100	15-40	15-20	NP-6
	36-60	Loamy fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	80-100	5-35	---	NP
Pt:												
Pratt----------	0-10	Loamy fine sand	SM	A-2	0	0	100	95-100	70-100	15-35	---	NP
	10-32	Loamy fine sand	SC-SM, SM	A-2, A-4	0	0	100	95-100	90-100	15-40	15-20	NP-6
	32-60	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	80-100	5-35	---	NP
Tivoli---------	0-7	Loamy fine sand	SM	A-2	0	0	100	95-100	90-100	15-35	---	NP
	7-60	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	80-100	5-25	---	NP
Qw:												
Quinlan--------	0-15	Loam	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	90-100	51-97	15-37	NP-14
	>15	Weathered bedrock			---	---	---	---	---	---	---	---
Woodward-------	0-27	Loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	51-95	15-31	NP-12
	>27	Weathered bedrock			---	---	---	---	---	---	---	---
SAP:												
Sand Pit-------	---	---	---	---	---	---	---	---	---	---	---	---
Sh:												
Shellabarger---	0-11	Loam	CL	A-4, A-6	0	0	95-100	95-100	80-95	55-75	25-35	7-15
	11-60	Sandy loam	SC	A-4, A-6	0	0	95-100	85-100	70-90	35-50	25-40	8-20
Th:												
Tivoli---------	0-6	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	80-100	5-25	---	NP
	6-60	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	80-100	5-25	---	NP
To:												
Tobin----------	0-25	Silt loam	CL	A-6	0	0	100	100	90-100	70-90	30-35	10-15
	25-33	Silt loam	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-45	10-20
	33-60	Silt loam	CL	A-6, A-7	0	0	100	100	85-100	70-95	30-45	10-20
Ts:												
Tobin----------	0-25	Silt loam	CL	A-6	0	0	100	100	90-100	70-90	30-35	10-15
	25-33	Silt loam	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-45	10-20
	33-60	Silt loam	CL	A-6, A-7	0	0	100	100	85-100	70-95	30-45	10-20
Uc:												
Uly----------	0-10	Silt loam	CL, ML	A-4, A-6	0	0	100	100	100	95-100	20-40	2-20
	10-22	Silt loam	CL, ML	A-4, A-6	0	0	100	100	100	95-100	25-40	3-15
	22-60	Silt loam	CL, ML	A-4, A-6	0	0	100	100	100	95-100	25-40	3-15
W:												
Water----------	---	---	---	---	---	---	---	---	---	---	---	---
Wa:												
Waldeck--------	0-14	Loam	ML, CL-ML	A-4	0	0	100	95-100	75-100	50-60	15-30	NP-7
	14-41	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	100	95-100	70-100	30-50	15-25	NP-5
	41-60	Fine sand	SM, SP, SP-SM	A-1, A-2, A-3	0	0	90-100	80-100	40-60	1-35	---	NP

PHYSICAL PROPERTIES OF THE SOILS
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Physical Properties table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink–swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth moving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3– or 1/10–bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table,the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink–swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability (K<–>sat) refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity (K<–>sat). The estimates in the table indicate the rate of water movement, in inches per hour, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3– or 1/10–bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink–swell potential of soils. The shrink–swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In Physical Properties table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the Physical Properties table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine–earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to

PHYSICAL PROPERTIES OF THE SOILS--Continued
Kiowa County, Kansas

wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.

2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.

3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.

5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.

6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.

7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.

8. Soils that are not subject to wind erosion because of coarse fragments on the surface or because of surface wetness.

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and forzen soil layers also influence wind erosion.

Explanation of Wind Erodibility Groups

Soil erodibility by wind is directly related to the percentage of dry non-erodible surface soil aggregates larger than 0.84 mm in diameter. From this percentage, the wind erodibility index (I-factor) is determined. The I-factor is an expression of the stability of these soil aggregates against breakdown by tillage and abrasion from wind erosion. Soils are placed in Wind Erodibility Groups (WEG) having similar percentages of dry soil aggregates larger than 0.84 mm as shown in the following table.

WEG	Properties of Soil Surface Layer	Dry Soil Aggregates >0.84mm Percent	Wind Erodibilty Index T/Ac/Yr (I)
1	Very fine sand, fine sand, sand, or coarse sand	1	310 1/
		2	250
		3	220
		5	180
		7	160
2	Loamy very fine sand, loamy fine sand, loamy sand, loamy coarse sand, organic soil materials.	10	134
3	Very fine sandy loam, fine sandy loam, sandy loam, or coarse sandy loam.	25	86
4	Clay, silty clay, non-calcareous clay loam, or silty clay loam with >35 percent clay content.	25	86
4L	Calcareous 2/ loam, silt loam, clay loam, or silty clay loam.	25	86
5	Non-calcareous loam and silt loam with <20 percent clay content, or sandy clay loam, sandy clay, and hemic 3/ organic soil materials.	40	56
6	Non-calcareous loam and silt loam with >20 percent clay content, or non-calcareous clay loam with <35 percent clay content.	45	48
7	Silt, non-calcareous silty clay loam with >35 percent clay content and fibric 3/ organic soil material.	50	38
8	Soils not suitable for cultivation due to coarse fragments or wetness; wind erosion is not a problem.	--	0

1/ The "I" values for WEG 1 vary from 160 for coarse sands to 310 for very fine sands. Use an "I" of 220 as an average figure. For coarser sand that has gravel, use a lower figure. For a soil that has no gravel and very fine sand, use a higher figure. (Modification for coarse fragments is preparation.)

2/ Calcareous is a strongly or violently effervescent reaction to cold dilute (1N) HCL.

3/ See Soil Taxonomy for definition.

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(Single entries under "Sand and Silt" are a representative percentage are calculated using an algorithm. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										K	Kf	T		
	In	Pct	Pct	Pct	g/cc	in/hr	In/in	Pct	Pct					
007CF:														
Clairemont---	0-14	11	68	15-27	1.40-1.60	0.60-2.00	0.16-0.22	0.0-2.9	0.0-2.0	.43	.43	5	4L	86
	14-60	7	66	18-35	1.40-1.65	0.60-2.00	0.16-0.22	0.0-2.9	---	.43	.43			
025AB:														
Albion-------	0-8	66	23	7-15	1.40-1.50	2.00-6.00	0.13-0.15	0.0-2.9	1.0-2.0	.20	.20	4	3	86
	8-15	67	19	10-18	1.50-1.60	2.00-6.00	0.12-0.19	0.0-2.9	0.5-1.0	.20	.24			
	15-22	66	24	4-15	1.50-1.60	2.00-6.00	0.09-0.11	0.0-2.9	0.5-1.0	.17	.20			
	22-60	92	2	2-10	1.55-1.65	6.00-20.00	0.03-0.11	0.0-2.9	0.2-0.5	.15	.32			
Shellabarger-	0-10	68	20	8-16	1.40-1.50	0.60-2.00	0.13-0.15	0.0-2.9	1.0-2.0	.20	.20	-	3	86
	10-60	60	18	18-27	1.50-1.60	0.60-2.00	0.16-0.18	0.0-2.9	0.5-1.0	.32	.32			
	60-64	66	24	3-18	1.55-1.65	0.60-2.00	0.05-0.16	0.0-2.9	0.1-0.5	.17	.32			
025PG:														
Penden-------	0-16	35	33	28-35	1.35-1.45	0.60-2.00	0.17-0.19	3.0-5.9	1.0-2.0	.28	.28	5	4L	86
	16-28	34	37	24-35	1.35-1.45	0.60-2.00	0.15-0.20	3.0-5.9	0.5-1.0	.32	.32			
	28-60	34	37	24-35	1.40-1.50	0.60-2.00	0.14-0.19	3.0-5.9	0.1-0.5	.32	.32			
025SH:														
Shellabarger-	0-11	43	40	12-22	1.30-1.40	0.60-2.00	0.20-0.22	0.0-2.9	1.0-2.0	.28	.28	5	6	48
	11-29	60	18	18-27	1.50-1.60	0.60-2.00	0.12-0.18	0.0-2.9	0.5-1.0	.32	.32			
	29-60	66	24	3-18	1.55-1.65	0.60-2.00	0.05-0.16	0.0-2.9	0.1-0.5	.17	.32			
033AC:														
Abilene------	0-8	24	52	20-27	1.30-1.65	0.60-2.00	0.15-0.20	3.0-5.9	1.0-3.0	.37	.37	5	6	48
	8-35	30	30	35-45	1.30-1.70	0.20-0.60	0.14-0.18	3.0-5.9	---	.28	.28			
	35-60	34	32	22-45	1.50-1.70	0.20-0.60	0.12-0.15	3.0-5.9	---	.32	.32			
033CK:														
Case---------	0-8	34	37	27-32	1.35-1.45	0.60-2.00	0.17-0.22	0.0-2.9	0.5-2.0	.32	.32	5	4L	86
	8-60	35	38	18-35	1.35-1.70	0.60-2.00	0.15-0.19	3.0-5.9	---	.32	.32			
033CS:														
Clark--------	0-10	34	37	27-32	1.35-1.45	0.60-2.00	0.17-0.22	3.0-5.9	1.0-2.0	.28	.28	5	4L	86
	10-60	35	38	18-35	1.35-1.70	0.60-2.00	0.14-0.19	3.0-5.9	---	.28	.28			
033CT:														
Clark--------	0-10	34	37	27-32	1.35-1.45	0.60-2.00	0.17-0.22	3.0-5.9	1.0-2.0	.28	.28	5	4L	86
	10-60	35	38	18-35	1.35-1.70	0.60-2.00	0.14-0.19	3.0-5.9	---	.28	.28			
033ED:														
Elandco------	0-31	10	68	18-27	1.30-1.50	0.60-2.00	0.15-0.22	3.0-5.9	1.0-3.0	.43	.43	5	6	48
	31-60	9	64	18-35	1.30-1.50	0.60-2.00	0.15-0.22	3.0-5.9	---	.43	.43			
033EF:														
Elandco------	0-31	10	68	18-27	1.30-1.50	0.60-2.00	0.15-0.22	3.0-5.9	1.0-3.0	.43	.43	5	6	48
	31-60	9	64	18-35	1.30-1.50	0.60-2.00	0.15-0.22	3.0-5.9	---	.43	.43			
033KC:														
Kanza--------	0-10	86	7	3-12	1.50-1.70	5.95-19.98	0.08-0.13	0.0-2.9	1.0-3.0	.17	.17	5	2	134
	10-60	92	2	1-12	1.50-1.70	5.95-19.98	0.06-0.11	0.0-2.9	---	.17	.17			
033LN:														
Lincoln------	0-10	86	4	5-15	1.35-1.50	5.95-19.98	0.06-0.11	0.0-2.9	0.5-0.5	.17	.17	5	2	134
	10-60			5-15	1.30-1.60	5.95-19.98	0.02-0.08	0.0-2.9	---	.17	.17			
033QR:														
Quinlan------	0-14	42	37	15-27	1.30-1.55	0.60-2.00	0.13-0.24	0.0-2.9	0.0-1.0	.37	.37	2	4L	86
	>14			---	---	---	---	---	---	---	---			
Woodward-----	0-30	43	43	10-18	1.30-1.60	0.60-2.00	0.13-0.20	0.0-2.9	0.5-2.0	.37	.37	3	4L	86
	>30			---	---	---	---	---	---	---	---			
033SH:														
Shellabarger-	0-11	68	20	8-16	1.35-1.50	0.60-2.00	0.13-0.21	0.0-2.9	1.0-2.0	.20	.24	5	3	86
	11-38	60	18	18-27	1.45-1.60	0.60-2.00	0.16-0.18	0.0-2.9	---	.28	.32			
	38-60	66	24	3-18	1.50-1.65	0.60-2.00	0.05-0.16	0.0-2.9	---	.28	.32			
033SM:														
Shellabarger-	0-11	68	20	8-16	1.35-1.50	0.60-2.00	0.13-0.21	0.0-2.9	1.0-2.0	.20	.24	5	3	86
	11-38	60	18	18-27	1.45-1.60	0.60-2.00	0.16-0.18	0.0-2.9	---	.28	.32			
	38-60	66	24	3-18	1.50-1.65	0.60-2.00	0.05-0.16	0.0-2.9	---	.28	.37			
047PA:														
Platte-------	0-9	44	41	10-20	1.50-1.70	0.60-2.00	0.20-0.24	0.0-2.9	1.0-3.0	.28	.28	5	4L	86
	9-60	92	7	0-3	1.90-2.00	20.00-99.90	0.02-0.04	0.0-2.9	0.0-0.3	.10	.15			
047WA:														
Waldeck------	0-10	68	20	8-16	1.50-1.60	2.00-6.00	0.14-0.18	0.0-2.9	1.0-2.0	.20	.20	4	3	86
	10-28	68	20	8-16	1.50-1.60	2.00-6.00	0.12-0.17	0.0-2.9	0.5-1.0	.20	.20			
	28-60	96	2	1-4	1.55-1.65	6.00-20.00	0.05-0.07	0.0-2.9	0.1-0.3	.20	.24			
057HD:														
Holdrege-----	0-11	59	23	15-20	1.45-1.55	0.60-2.00	0.20-0.22	0.0-2.9	1.0-3.0	.32	.32	5	3	86
	11-33	7	62	28-35	1.25-1.35	0.60-2.00	0.18-0.20	3.0-5.9	1.0-2.0	.43	.43			
	33-48	8	68	18-30	1.35-1.45	0.60-2.00	0.18-0.22	3.0-5.9	0.5-1.0	.43	.43			
	48-66	14	69	15-20	1.45-1.55	0.60-2.00	0.20-0.22	3.0-5.9	0.0-0.5	.43	.43			
057PR:														
Pratt--------	0-9	79	16	2-8	1.45-1.55	6.00-20.00	0.10-0.12	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	9-28	86	7	4-11	1.45-1.55	6.00-20.00	0.09-0.17	0.0-2.9	0.0-0.5	.17	.17			
	28-54	79	16	1-8	1.50-1.60	6.00-20.00	0.05-0.10	0.0-2.9	0.0-0.5	.17	.17			
057PT:														
Pratt--------	0-9	79	16	2-8	1.45-1.55	5.95-19.98	0.10-0.12	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	9-28	86	7	4-11	1.45-1.55	5.95-19.98	0.09-0.17	0.0-2.9	0.0-0.5	.17	.17			
	28-54	79	16	1-8	1.50-1.60	5.95-19.98	0.05-0.10	0.0-2.9	0.0-0.5	.17	.17			
Tivoli-------	0-6	86	7	5-10	1.40-1.50	5.95-19.98	0.10-0.12	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	6-60	93	1	1-10	1.50-1.60	5.95-19.98	0.05-0.09	0.0-2.9	0.0-0.5	.15	.15			
057TV:														
Tivoli-------	0-6	93	1	1-10	1.40-1.50	6.00-20.00	0.07-0.09	0.0-2.9	0.5-1.0	.15	.15	5	1	250
	6-60	93	1	1-10	1.55-1.65	6.00-20.00	0.05-0.08	0.0-2.9	0.0-0.5	.15	.15			

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Kiowa County, Kansas: Published

(Single entries under "Sand and Silt" are a representative percentage are calculated using an algorithm. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										K	Kf	T		
	In	Pct	Pct	Pct	g/cc	in/hr	In/in	Pct	Pct					
151BC:														
Blanket------	0-13	20	49	27-35	1.30-1.45	0.60-2.00	0.15-0.20	3.0-5.9	1.0-3.0	.37	.37	5	6	48
	13-46	8	50	35-50	1.35-1.55	0.20-0.60	0.12-0.18	3.0-5.9	---	.43	.43			
	46-60	7	51	35-50	1.35-1.55	0.60-2.00	0.12-0.18	3.0-5.9	---	.43	.37			
151BH:														
Blanket------	0-13	26	53	15-27	1.30-1.50	0.60-2.00	0.15-0.20	0.0-2.9	1.0-3.0	.37	.37	5	6	48
	13-46	8	50	35-50	1.35-1.55	0.20-0.60	0.12-0.18	3.0-5.9	---	.43	.43			
	46-60	7	51	35-50	1.35-1.55	0.60-2.00	0.12-0.18	3.0-5.9	---	.43	.37			
151FE:														
Farnum-------	0-11	63	26	8-14	1.45-1.55	2.00-6.00	0.13-0.18	0.0-2.9	1.0-2.0	.20	.20	5	3	86
	11-41	34	36	25-35	1.40-1.50	0.60-2.00	0.15-0.19	3.0-5.9	---	.28	.28			
	41-60	61	19	12-29	1.40-1.55	0.60-2.00	0.13-0.16	0.0-2.9	---	.28	.28			
151NM:														
Naron--------	0-11	46	43	8-14	1.40-1.50	0.60-2.00	0.18-0.20	0.0-2.9	1.0-3.0	.28	.28	5	5	56
	11-38	59	18	18-27	1.45-1.55	0.60-2.00	0.15-0.18	0.0-2.9	---	.32	.32			
	38-60	65	27	2-14	1.50-1.60	2.00-6.00	0.10-0.15	0.0-2.9	---	.32	.32			
151SE:														
Shellabarger-	0-11	68	20	8-16	1.35-1.50	0.60-2.00	0.13-0.21	0.0-2.9	1.0-2.0	.20	.20	5	3	86
	11-34	60	18	18-27	1.45-1.60	0.60-2.00	0.16-0.18	0.0-2.9	---	.28	.32			
	34-60	66	24	3-18	1.50-1.65	0.60-2.00	0.05-0.16	0.0-2.9	---	.28	.32			
1324:														
Carway-------	0-7	67	20	10-16	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	0.5-1.0	.20	.20	5	3	86
	7-10	61	18	20-29	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.5-1.0	.28	.28			
	10-15	61	18	20-29	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.5-1.0	.28	.28			
	15-22	62	19	18-29	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.5-1.0	.28	.28			
	22-35	62	19	18-29	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.5-1.0	.28	.28			
	35-40	34	37	28-45	1.40-1.60	0.00-0.06	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	40-54	33	32	30-45	1.40-1.60	0.00-0.06	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	54-63	29	31	30-45	1.40-1.60	0.00-0.06	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	63-72	30	32	30-45	1.40-1.60	0.00-0.06	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	72-80	35	33	15-34	1.45-1.65	0.60-2.00	0.13-0.18	0.0-2.9	0.0-0.5	.28	.28			
Carbika------	0-11	27	55	10-22	1.45-1.55	0.60-2.00	0.15-0.18	0.0-2.9	1.0-2.0	.24	.24	5	5	56
	11-15	30	30	35-42	1.40-1.60	0.00-0.06	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	15-22	30	32	35-42	1.40-1.60	0.00-0.06	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	22-34	34	32	21-35	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.5-1.0	.28	.28			
	34-41	34	32	21-35	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.5-1.0	.28	.28			
	41-60	35	33	21-35	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.5-1.0	.28	.28			
	60-80	34	32	21-35	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.5-1.0	.28	.28			
1725:														
Farnum-------	0-5	43	40	14-27	1.35-1.45	0.60-2.00	0.19-0.22	0.0-2.9	1.0-3.0	.28	.28	5	6	56
	5-15	42	38	14-27	1.35-1.45	0.60-2.00	0.19-0.22	0.0-2.9	1.0-3.0	.28	.28			
	15-21	40	37	20-27	1.40-1.50	0.60-2.00	0.17-0.19	0.0-2.9	0.5-1.5	.28	.28			
	21-34	57	18	20-35	1.40-1.50	0.60-2.00	0.15-0.19	3.0-5.9	0.0-0.5	.28	.28			
	34-48	38	36	25-35	1.40-1.50	0.60-2.00	0.15-0.19	3.0-5.9	0.0-0.5	.28	.28			
	48-61	34	37	25-35	1.40-1.50	0.60-2.00	0.15-0.19	3.0-5.9	0.0-0.5	.28	.28			
	61-73	35	38	25-35	1.40-1.50	0.60-2.00	0.15-0.19	3.0-5.9	0.0-0.5	.28	.28			
	73-80	39	37	12-29	1.40-1.55	0.60-2.00	0.13-0.16	0.0-2.9	0.0-0.5	.28	.28			
Funmar-------	0-6	42	38	14-26	1.35-1.45	0.60-2.00	0.19-0.22	0.0-2.9	1.0-3.0	.28	.28	5	6	56
	6-12	41	37	14-26	1.35-1.45	0.60-2.00	0.19-0.22	0.0-2.9	1.0-3.0	.28	.28			
	12-17	38	36	22-34	1.40-1.60	0.20-0.60	0.17-0.19	0.0-2.9	1.0-2.0	.32	.32			
	17-26	34	37	22-34	1.40-1.60	0.20-0.60	0.17-0.19	0.0-2.9	1.0-2.0	.32	.32			
	26-32	38	36	22-34	1.40-1.60	0.20-0.60	0.17-0.19	0.0-2.9	0.5-2.0	.32	.32			
	32-38	20	48	26-34	1.35-1.45	0.20-0.60	0.20-0.22	0.0-2.9	1.0-3.0	.32	.32			
	38-54	8	54	28-45	1.40-1.60	0.06-0.20	0.10-0.17	3.0-5.9	0.0-0.5	.37	.37			
	54-66	8	56	28-45	1.40-1.60	0.06-0.20	0.10-0.17	3.0-5.9	0.0-0.5	.37	.37			
	66-80	8	54	26-45	1.50-1.60	0.06-0.20	0.10-0.17	0.0-2.9	0.0-0.5	.37	.37			
1726:														
Farnum-------	0-5	43	40	14-27	1.35-1.45	0.60-2.00	0.19-0.22	0.0-2.9	1.0-3.0	.28	.28	5	6	56
	5-15	42	38	14-27	1.35-1.45	0.60-2.00	0.19-0.22	0.0-2.9	1.0-3.0	.28	.28			
	15-21	40	37	20-27	1.40-1.50	0.60-2.00	0.17-0.19	0.0-2.9	0.5-1.5	.28	.28			
	21-34	57	18	20-35	1.40-1.50	0.60-2.00	0.15-0.19	3.0-5.9	0.0-0.5	.28	.28			
	34-48	38	36	25-35	1.40-1.50	0.60-2.00	0.15-0.19	3.0-5.9	0.0-0.5	.28	.28			
	48-61	34	37	25-35	1.40-1.50	0.60-2.00	0.15-0.19	3.0-5.9	0.0-0.5	.28	.28			
	61-73	35	38	25-35	1.40-1.50	0.60-2.00	0.15-0.19	3.0-5.9	0.0-0.5	.28	.28			
	73-80	39	37	12-29	1.40-1.55	0.60-2.00	0.13-0.16	0.0-2.9	0.0-0.5	.28	.28			
Funmar-------	0-6	42	38	14-26	1.35-1.45	0.60-2.00	0.19-0.22	0.0-2.9	1.0-3.0	.28	.28	5	6	56
	6-12	41	37	14-26	1.35-1.45	0.60-2.00	0.19-0.22	0.0-2.9	1.0-3.0	.28	.28			
	12-17	38	36	22-34	1.40-1.60	0.20-0.60	0.17-0.19	0.0-2.9	1.0-2.0	.32	.32			
	17-26	34	37	22-34	1.40-1.60	0.20-0.60	0.17-0.19	0.0-2.9	1.0-2.0	.32	.32			
	26-32	38	36	22-34	1.40-1.60	0.20-0.60	0.17-0.19	0.0-2.9	0.5-2.0	.32	.32			
	32-38	20	48	26-34	1.35-1.45	0.20-0.60	0.20-0.22	0.0-2.9	1.0-3.0	.32	.32			
	38-54	8	54	28-45	1.40-1.60	0.06-0.20	0.10-0.17	3.0-5.9	0.0-0.5	.37	.37			
	54-66	8	56	28-45	1.40-1.60	0.06-0.20	0.10-0.17	3.0-5.9	0.0-0.5	.37	.37			
	66-80	8	54	26-45	1.50-1.60	0.06-0.20	0.10-0.17	0.0-2.9	0.0-0.5	.37	.37			
1985:														
Hayes--------	0-8	63	26	9-13	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	0.5-1.0	.20	.20	5	3	86
	8-14	65	20	8-17	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	0.0-0.5	.24	.24			
	14-23	65	19	8-17	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	0.0-0.5	.24	.24			
	23-34	65	20	8-17	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	0.0-0.5	.24	.24			
	34-42	67	20	8-17	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	0.0-0.5	.24	.24			
	42-47	66	20	8-17	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	0.0-0.5	.24	.24			
	47-56	61	18	19-28	1.40-1.60	0.20-0.60	0.15-0.18	0.0-2.9	0.0-0.5	.28	.28			
	56-69	8	50	28-45	1.40-1.60	0.06-0.20	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	69-80	34	37	28-45	1.40-1.60	0.06-0.20	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			

PHYSICAL PROPERTIES OF THE SOILS--Continued
Kiowa County, Kansas: Published

(Single entries under "Sand and Silt" are a representative percentage are calculated using an algorithm. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										K	Kf	T		
	In	Pct	Pct	Pct	g/cc	in/hr	In/in	Pct	Pct					
1986:														
Hayes--------	0-8	85	7	1-9	1.50-1.60	6.00-19.99	0.07-0.11	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	8-14	65	20	8-17	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	0.0-0.5	.24	.24			
	14-23	65	19	8-17	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	0.0-0.5	.24	.24			
	23-34	65	20	8-17	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	0.0-0.5	.24	.24			
	34-42	67	20	8-17	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	0.0-0.5	.24	.24			
	42-47	66	20	8-17	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	0.0-0.5	.24	.24			
	47-56	61	18	19-28	1.40-1.60	0.20-0.60	0.15-0.18	0.0-2.9	0.0-0.5	.28	.28			
	56-69	8	50	28-45	1.40-1.60	0.06-0.20	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	69-80	34	37	28-45	1.40-1.60	0.06-0.20	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
Solvay-------	0-5	79	16	3-8	1.50-1.60	2.00-6.00	0.07-0.11	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	5-14	62	19	13-34	1.50-1.80	0.20-2.00	0.15-0.18	0.0-2.9	0.0-0.8	.28	.28			
	14-23	63	19	13-34	1.50-1.80	0.20-2.00	0.15-0.18	0.0-2.9	0.0-0.5	.28	.28			
	23-37	66	20	13-34	1.50-1.80	0.20-2.00	0.15-0.18	0.0-2.9	0.0-0.5	.28	.28			
	37-58	63	26	7-22	1.50-1.80	2.00-6.00	0.11-0.16	0.0-2.9	0.0-0.5	.24	.24			
	58-76	83	6	7-22	1.50-1.80	2.00-6.00	0.11-0.16	0.0-2.9	0.0-0.5	.24	.24			
	76-80	84	6	7-22	1.50-1.80	2.00-6.00	0.11-0.16	0.0-2.9	0.0-0.5	.24	.24			
1988:														
Hayes--------	0-8	63	26	9-13	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	0.5-1.0	.20	.20	5	3	86
	8-14	65	20	8-17	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	0.0-0.5	.24	.24			
	14-23	65	19	8-17	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	0.0-0.5	.24	.24			
	23-34	65	20	8-17	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	0.0-0.5	.24	.24			
	34-42	67	20	8-17	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	0.0-0.5	.24	.24			
	42-47	66	20	8-17	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	0.0-0.5	.24	.24			
	47-56	61	18	19-28	1.40-1.60	0.20-0.60	0.15-0.18	0.0-2.9	0.0-0.5	.28	.28			
	56-69	8	50	28-45	1.40-1.60	0.06-0.20	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	69-80	34	37	28-45	1.40-1.60	0.06-0.20	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
2556:														
Langdon------	0-8	96	1	0-6	1.35-1.50	6.00-19.99	0.07-0.09	0.0-2.9	0.0-1.0	.15	.15	5	1	220
	8-47			0-12	1.50-1.70	6.00-19.99	0.02-0.08	0.0-2.9	0.0-0.0	.15	.15			
	47-64	96	1	0-5	1.50-1.70	6.00-19.99	0.02-0.08	0.0-2.9	0.0-0.0	.17	.15			
	64-80			0-12	1.50-1.70	6.00-19.99	0.02-0.08	0.0-2.9	0.0-0.0	.15	.15			
3512:														
Saltcreek----	0-5	67	20	10-19	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	1.0-2.0	.20	.20	5	3	86
	5-10	60	18	10-27	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	1.0-2.0	.20	.20			
	10-26	60	18	16-28	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.0-1.0	.28	.28			
	26-39	62	19	16-28	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.0-1.0	.28	.28			
	39-56	8	51	28-42	1.40-1.60	0.06-0.20	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	56-66	8	55	28-42	1.40-1.60	0.06-0.20	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	66-80	20	48	28-42	1.40-1.60	0.06-0.20	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
Naron--------	0-8	64	27	8-15	1.45-1.55	2.00-6.00	0.14-0.18	0.0-2.9	1.0-3.0	.20	.20	5	3	86
	8-14	65	20	8-15	1.45-1.55	2.00-6.00	0.14-0.18	0.0-2.9	1.0-3.0	.20	.20			
	14-28	62	19	18-27	1.45-1.55	0.60-2.00	0.15-0.18	0.0-2.9	0.0-0.5	.32	.32			
	28-39	61	18	18-27	1.45-1.55	0.60-2.00	0.15-0.18	0.0-2.9	0.0-0.5	.32	.32			
	39-55	62	19	18-27	1.45-1.55	0.60-2.00	0.15-0.18	0.0-2.9	0.0-0.5	.32	.32			
	55-66	63	19	2-18	1.55-1.60	2.00-6.00	0.10-0.15	0.0-2.9	0.0-0.5	.17	.17			
	66-80	86		2-18	1.55-1.60	5.95-19.98	0.10-0.15	0.0-2.9	0.0-0.5	.10	.10			
3540:														
Solvay-------	0-5	79	16	3-8	1.50-1.60	2.00-6.00	0.07-0.11	0.0-2.9	0.5-1.0	.17	.17	5	3	86
	5-14	62	19	13-34	1.50-1.80	0.20-2.00	0.15-0.18	0.0-2.9	0.0-0.8	.28	.28			
	14-23	63	19	13-34	1.50-1.80	0.20-2.00	0.15-0.18	0.0-2.9	0.0-0.5	.28	.28			
	23-37	66	20	13-34	1.50-1.80	0.20-2.00	0.15-0.18	0.0-2.9	0.0-0.5	.28	.28			
	37-58	63	26	7-22	1.50-1.80	2.00-6.00	0.11-0.16	0.0-2.9	0.0-0.5	.24	.24			
	58-76	83	6	7-22	1.50-1.80	2.00-6.00	0.11-0.16	0.0-2.9	0.0-0.5	.24	.24			
	76-80	84	6	7-22	1.50-1.80	2.00-6.00	0.11-0.16	0.0-2.9	0.0-0.5	.24	.24			
3640:														
Tivin--------	0-7	98	1	0-2	1.35-1.50	6.00-19.98	0.07-0.09	0.0-2.9	0.0-1.0	.15	.15	5	1	220
	7-18	97	1	0-2	1.35-1.50	5.95-19.98	0.02-0.08	0.0-2.9	0.0-0.5	.10	.10			
	18-80	97	1	0-3	1.50-1.70	5.95-19.98	0.02-0.08	0.0-2.9	0.0-0.0	.10	.10			
An:														
Albion-------	0-11	66	23	7-15	1.35-1.50	2.00-6.00	0.13-0.17	0.0-2.9	1.0-2.0	.20	.20	4	3	86
	11-24	67	19	10-18	1.45-1.60	2.00-6.00	0.12-0.18	0.0-2.9	---	.20	.24			
	24-60	92	2	2-10	1.50-1.65	5.95-19.98	0.03-0.10	0.0-2.9	---	.15	.32			
As:														
Albion-------	0-11	66	23	7-15	1.35-1.50	2.00-6.00	0.13-0.17	0.0-2.9	1.0-2.0	.20	.20	4	3	86
	11-24	67	19	10-18	1.45-1.60	2.00-6.00	0.12-0.18	0.0-2.9	---	.20	.24			
	24-60	92	2	2-10	1.50-1.65	5.95-19.98	0.03-0.10	0.0-2.9	---	.15	.32			
Shellabarger-	0-12	68	20	8-16	1.35-1.50	0.60-2.00	0.13-0.21	0.0-2.9	1.0-2.0	.20	.20	5	3	86
	12-60	60	18	18-27	1.45-1.60	0.60-2.00	0.16-0.18	0.0-2.9	---	.28	.32			
At:														
Attica-------	0-10	87	7	2-10	1.50-1.60	2.00-6.00	0.10-0.13	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	10-30	67	20	8-18	1.50-1.60	2.00-6.00	0.12-0.17	0.0-2.9	0.2-0.8	.24	.24			
	30-60	63	26	4-18	1.50-1.60	2.00-6.00	0.08-0.16	0.0-2.9	0.1-0.5	.24	.28			
Ax:														
Attica-------	0-10	87	7	2-10	1.50-1.60	2.00-6.00	0.10-0.13	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	10-30	67	20	8-18	1.50-1.60	2.00-6.00	0.12-0.17	0.0-2.9	0.2-0.8	.24	.24			
	30-60	63	26	4-18	1.50-1.60	2.00-6.00	0.08-0.16	0.0-2.9	0.1-0.5	.24	.28			
Carwile------	0-15	62	26	5-18	1.30-1.65	0.60-2.00	0.11-0.20	0.0-2.9	1.0-3.0	.24	.24	5	3	86
	15-36	23	29	35-60	1.35-1.75	0.06-0.20	0.12-0.20	6.0-8.9	0.5-1.0	.37	.37			
	36-60	36	32	20-45	1.35-1.75	0.20-2.00	0.12-0.20	6.0-8.9	0.1-0.3	.32	.37			
BOP:														
Borrow Pits--	---			---	---	---	---	---	---	---	---	-	---	---

PHYSICAL PROPERTIES OF THE SOILS--Continued
Kiowa County, Kansas: Published

(Single entries under "Sand and Silt" are a representative percentage are calculated using an algorithm. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										K	Kf	T		
	In	Pct	Pct	Pct	g/cc	in/hr	In/in	Pct	Pct					
Ca:														
Canadian-----	0-14	62	26	5-18	1.30-1.60	2.00-6.00	0.10-0.15	0.0-2.9	1.0-3.0	.20	.20	5	3	86
	14-30	66	20	10-18	1.40-1.70	2.00-6.00	0.10-0.20	0.0-2.9	---	.20	.20			
	30-60	62	26	5-18	1.40-1.70	1.98-19.98	0.07-0.20	0.0-2.9	---	.20	.20			
Cc:														
Carwile------	0-15	62	26	5-18	1.30-1.65	0.60-2.00	0.11-0.20	0.0-2.9	1.0-3.0	.24	.24	5	3	86
	15-36	23	29	35-60	1.35-1.75	0.06-0.20	0.12-0.20	6.0-8.9	---	.37	.37			
	36-60	36	32	20-45	1.35-1.75	0.20-2.00	0.12-0.20	6.0-8.9	---	.32	.32			
Ce:														
Case---------	0-6	34	37	27-32	1.35-1.45	0.60-2.00	0.17-0.22	0.0-2.9	0.5-2.0	.32	.32	5	4L	86
	6-60	35	38	18-35	1.35-1.70	0.60-2.00	0.15-0.19	3.0-5.9	---	.32	.32			
Cf:														
Case---------	0-6	34	37	27-32	1.35-1.45	0.60-2.00	0.17-0.22	0.0-2.9	0.5-2.0	.32	.32	5	4L	86
	6-60	35	38	18-35	1.35-1.70	0.60-2.00	0.15-0.19	3.0-5.9	---	.32	.32			
Cg:														
Case---------	0-6	34	37	27-32	1.35-1.45	0.60-2.00	0.17-0.22	0.0-2.9	0.5-2.0	.32	.32	5	4L	86
	6-60	35	38	18-35	1.35-1.70	0.60-2.00	0.15-0.19	3.0-5.9	---	.32	.32			
Canlon-------	0-5	42	38	12-27	1.30-1.45	0.60-2.00	0.15-0.24	0.0-2.9	0.5-2.0	.32	.32	1	4L	86
	5-14	43	40	8-27	1.35-1.50	0.60-2.00	0.15-0.22	0.0-2.9	---	.32	.43			
	>14			---	---	---	---	---	---	---	---			
Ck:														
Clark--------	0-5	42	37	15-27	1.35-1.45	0.60-2.00	0.17-0.22	3.0-5.9	1.0-2.0	.28	.28	5	4L	86
	5-60	35	38	18-35	1.35-1.70	0.60-2.00	0.14-0.19	3.0-5.9	---	.28	.28			
Cm:														
Clark--------	0-10	42	37	15-27	1.35-1.45	0.60-2.00	0.17-0.22	3.0-5.9	1.0-2.0	.28	.28	5	4L	86
	10-60	35	38	18-35	1.35-1.70	0.60-2.00	0.14-0.19	3.0-5.9	---	.28	.28			
Co:														
Coly---------	0-5	11	68	18-24	1.30-1.50	0.60-2.00	0.20-0.24	0.0-2.9	1.0-2.0	.43	.43	5	4L	86
	5-60	11	68	18-24	1.30-1.50	0.60-2.00	0.17-0.22	0.0-2.9	---	.43	.43			
Cp:														
Coly---------	0-5	11	68	18-24	1.30-1.50	0.60-2.00	0.20-0.24	0.0-2.9	1.0-2.0	.43	.43	5	4L	86
	5-60	11	68	18-24	1.30-1.50	0.60-2.00	0.17-0.22	0.0-2.9	---	.43	.43			
Ct:														
Coly---------	0-5	11	68	18-24	1.30-1.50	0.60-2.00	0.20-0.24	0.0-2.9	1.0-2.0	.43	.43	5	4L	86
	5-60	11	68	18-24	1.30-1.50	0.60-2.00	0.17-0.22	0.0-2.9	---	.43	.43			
Tobin--------	0-25	10	68	18-27	1.30-1.40	0.60-2.00	0.20-0.24	0.0-2.9	1.0-4.0	.32	.32	5	6	48
	25-32	9	64	18-35	1.35-1.50	0.60-2.00	0.17-0.20	3.0-5.9	1.0-4.0	.32	.32			
	32-60	9	64	18-35	1.35-1.45	0.60-2.00	0.18-0.22	3.0-5.9	0.5-0.5	.43	.43			
Da:														
Dale---------	0-16	11	68	15-26	1.30-1.50	0.60-2.00	0.15-0.24	0.0-2.9	1.0-3.0	.37	.37	5	5	56
	16-60	7	66	18-35	1.40-1.70	0.60-2.00	0.15-0.24	3.0-5.9	---	.37	.37			
Fa:														
Farnum-------	0-11	42	38	14-27	1.35-1.45	0.60-2.00	0.19-0.22	0.0-2.9	1.0-3.0	.28	.28	5	6	48
	11-54	34	36	25-35	1.40-1.50	0.60-2.00	0.15-0.19	3.0-5.9	---	.28	.28			
	54-60	38	41	12-29	1.40-1.55	0.60-2.00	0.13-0.16	0.0-2.9	---	.28	.28			
Fb:														
Farnum-------	0-11	42	38	14-27	1.35-1.45	0.60-2.00	0.19-0.22	0.0-2.9	1.0-3.0	.28	.28	5	6	48
	11-51	34	36	25-35	1.40-1.50	0.60-2.00	0.15-0.19	3.0-5.9	---	.28	.28			
	51-60	38	41	12-29	1.40-1.55	0.60-2.00	0.13-0.16	0.0-2.9	---	.28	.28			
Ha:														
Harney-------	0-5	24	51	22-27	1.30-1.40	0.60-2.00	0.22-0.24	0.0-2.9	2.0-4.0	.32	.32	5	6	48
	5-28	7	54	35-42	1.35-1.50	0.20-0.60	0.12-0.19	3.0-5.9	---	.43	.43			
	28-60	20	50	24-35	1.20-1.35	0.60-2.00	0.18-0.22	0.0-2.9	---	.43	.43			
Hb:														
Harney-------	0-5	24	51	22-27	1.30-1.40	0.60-2.00	0.22-0.24	0.0-2.9	2.0-4.0	.32	.32	5	6	48
	5-28	7	54	35-42	1.35-1.50	0.20-0.60	0.12-0.19	3.0-5.9	---	.43	.43			
	28-60	18	52	24-35	1.20-1.35	0.60-2.00	0.18-0.22	0.0-2.9	---	.43	.43			
He:														
Hedville-----	0-11	65	20	8-22	1.35-1.50	0.60-2.00	0.14-0.18	0.0-2.9	1.0-4.0	.20	.20	1	3	86
	11-15	44	41	8-22	1.35-1.50	0.60-2.00	0.08-0.18	0.0-2.9	---	.32	.55			
	>15			---	---	---	---	---	---	---	---			
Rock Outcrop-	---			---	---	---	---	---	---	---	---	-	---	---
Ho:														
Holdrege-----	0-10	11	69	15-25	1.40-1.60	0.60-2.00	0.22-0.24	3.0-5.9	1.0-3.0	.32	.32	5	6	48
	10-27	7	62	28-35	1.20-1.40	0.60-2.00	0.18-0.20	3.0-5.9	---	.43	.43			
	27-32	8	68	18-30	1.30-1.50	0.60-2.00	0.17-0.20	3.0-5.9	---	.43	.43			
	32-60	14	69	15-20	1.40-1.60	0.60-2.00	0.20-0.22	3.0-5.9	---	.43	.43			
Hp:														
Holdrege-----	0-10	11	69	15-25	1.40-1.60	0.60-2.00	0.22-0.24	3.0-5.9	1.0-3.0	.32	.32	5	6	48
	10-27	7	62	28-35	1.20-1.40	0.60-2.00	0.18-0.20	3.0-5.9	---	.43	.43			
	27-32	8	68	18-30	1.30-1.50	0.60-2.00	0.17-0.20	3.0-5.9	---	.43	.43			
	32-60	14	69	15-20	1.40-1.60	0.60-2.00	0.20-0.22	3.0-5.9	---	.43	.43			
Kr:														
Krier--------	0-5	67	24	6-12	1.35-1.45	2.00-6.00	0.13-0.17	0.0-2.9	0.5-2.0	.24	.24	3	3	86
	5-11	64	15	10-32	1.40-1.50	2.00-6.00	0.13-0.18	0.0-2.9	---	.32	.32			
	11-60	96	2	1-5	1.45-1.55	5.95-19.98	0.03-0.07	0.0-2.9	---	.15	.15			
Lh:														
Lancaster----	0-13	43	38	12-26	1.35-1.45	0.60-2.00	0.17-0.22	0.0-2.9	1.0-4.0	.28	.32	3	6	48
	13-23	42	37	12-30	1.40-1.55	0.60-2.00	0.15-0.19	0.0-2.9	---	.28	.37			
	>23			---	---	---	---	---	---	---	---			
Hedville-----	0-11	65	20	8-22	1.35-1.50	0.60-2.00	0.14-0.18	0.0-2.9	1.0-4.0	.20	.20	2	3	86
	11-15	44	41	8-22	1.35-1.50	0.60-2.00	0.08-0.18	0.0-2.9	---	.32	.55			
	>15			---	---	---	---	---	---	---	---			

PHYSICAL PROPERTIES OF THE SOILS--Continued
Kiowa County, Kansas: Published

(Single entries under "Sand and Silt" are a representative percentage are calculated using an algorithm. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										K	Kf	T		
	In	Pct	Pct	Pct	g/cc	in/hr	In/in	Pct	Pct					
Ln:														
Lincoln------	0-8	67	19	10-18	1.30-1.60	5.95-19.98	0.10-0.15	0.0-2.9	0.0-1.0	.20	.20	5	3	86
	8-60			5-15	1.30-1.60	5.95-19.98	0.02-0.08	0.0-2.9	---	.17	.17			
M-W:														
Miscellaneous Water-------	---			---	---	---	---	---	---	---	---	-	---	---
Na:														
Naron--------	0-10	63	26	8-14	1.40-1.50	2.00-6.00	0.14-0.18	0.0-2.9	1.0-3.0	.20	.20	5	3	86
	10-48	60	18	18-27	1.45-1.55	0.60-2.00	0.15-0.18	0.0-2.9	---	.32	.32			
	48-60	65	27	2-14	1.50-1.60	2.00-6.00	0.10-0.15	0.0-2.9	---	.32	.32			
Nb:														
Naron--------	0-10	63	26	8-14	1.40-1.50	2.00-6.00	0.14-0.18	0.0-2.9	1.0-3.0	.20	.20	5	3	86
	10-48	60	18	18-27	1.45-1.55	0.60-2.00	0.15-0.18	0.0-2.9	---	.32	.32			
	48-60	65	27	2-14	1.50-1.60	2.00-6.00	0.10-0.15	0.0-2.9	---	.32	.32			
Ne:														
Ness---------	0-38	5	45	40-60	1.30-1.45	0.00-0.06	0.11-0.14	6.0-8.9	1.0-3.0	.28	.28	5	4	86
	38-60	18	52	20-40	1.35-1.45	0.06-2.00	0.10-0.20	3.0-5.9	---	.28	.28			
Nw:														
New Cambria--	0-12	5	45	40-60	1.30-1.40	0.06-0.20	0.12-0.14	6.0-8.9	2.0-4.0	.28	.28	5	4	86
	12-36	5	46	38-60	1.35-1.45	0.06-0.20	0.13-0.18	6.0-8.9	---	.28	.28			
	36-60	8	52	30-50	1.35-1.45	0.00-0.60	0.12-0.16	6.0-8.9	---	.28	.28			
Oe:														
Owens--------	0-6	22	28	40-60	1.35-1.55	0.00-0.06	0.12-0.14	6.0-8.9	0.5-2.0	.32	.32	2	4	86
	6-15	23	29	35-60	1.45-1.65	0.00-0.06	0.10-0.12	6.0-8.9	---	.32	.32			
	>15			---	---	---	---	---	---	---	---			
Pe:														
Plevna-------	0-9	45	42	8-18	1.40-1.50	0.60-2.00	0.18-0.20	0.0-2.9	1.0-4.0	.28	.28	5	5	56
	9-48	67	20	8-18	1.40-1.50	2.00-6.00	0.12-0.16	0.0-2.9	---	.20	.20			
	48-60	95	1	1-7	1.50-1.60	2.00-6.00	0.05-0.07	0.0-2.9	---	.20	.20			
Pr:														
Pratt--------	0-12	79	16	2-8	1.40-1.55	5.95-19.98	0.10-0.13	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	12-36	86	7	4-11	1.45-1.55	5.95-19.98	0.09-0.12	0.0-2.9	---	.17	.17			
	36-60	79	16	1-8	1.45-1.60	5.95-19.98	0.08-0.12	0.0-2.9	---	.17	.17			
Ps:														
Pratt--------	0-12	79	16	2-8	1.40-1.55	5.95-19.98	0.10-0.13	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	12-36	86	7	4-11	1.45-1.55	5.95-19.98	0.09-0.12	0.0-2.9	---	.17	.17			
	36-60	79	16	1-8	1.45-1.60	5.95-19.98	0.08-0.12	0.0-2.9	---	.17	.17			
Pt:														
Pratt--------	0-10	79	16	2-8	1.40-1.55	5.95-19.98	0.10-0.13	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	10-32	86	7	4-11	1.45-1.55	5.95-19.98	0.09-0.12	0.0-2.9	---	.17	.17			
	32-60	95	1	1-8	1.45-1.60	5.95-19.98	0.08-0.12	0.0-2.9	---	.17	.17			
Tivoli-------	0-7	86	7	5-10	1.35-1.50	5.95-19.98	0.07-0.11	0.0-2.9	0.0-1.0	.17	.17	5	2	134
	7-60	93	1	1-10	1.50-1.70	5.95-19.98	0.02-0.08	0.0-2.9	---	.17	.17			
Qw:														
Quinlan------	0-15	42	37	15-27	1.30-1.55	0.60-2.00	0.13-0.24	0.0-2.9	0.0-1.0	.37	.37	2	4L	86
	>15			---	---	---	---	---	---	---	---			
Woodward-----	0-27	43	43	10-18	1.30-1.60	0.60-2.00	0.13-0.20	0.0-2.9	0.5-2.0	.37	.37	3	4L	86
	>27			---	---	---	---	---	---	---	---			
SAP:														
Sand Pit-----	---			---	---	---	---	---	---	---	---	-	---	---
Sh:														
Shellabarger-	0-11	43	40	12-22	1.30-1.40	0.60-2.00	0.20-0.22	0.0-2.9	1.0-3.0	.28	.28	5	6	48
	11-60	63	14	18-27	1.45-1.60	0.60-2.00	0.16-0.18	0.0-2.9	---	.28	.32			
Th:														
Tivoli-------	0-6	93	1	1-10	1.35-1.50	5.95-19.98	0.02-0.08	0.0-2.9	0.0-1.0	.17	.17	5	1	250
	6-60	93	1	1-10	1.50-1.70	5.95-19.98	0.02-0.08	0.0-2.9	0.0-0.3	.17	.17			
To:														
Tobin--------	0-25	10	68	18-27	1.30-1.40	0.60-2.00	0.20-0.24	0.0-2.9	1.0-4.0	.32	.32	5	6	48
	25-33	9	64	18-35	1.35-1.50	0.60-2.00	0.17-0.20	3.0-5.9	1.0-4.0	.32	.32			
	33-60	9	64	18-35	1.35-1.45	0.60-2.00	0.18-0.22	3.0-5.9	0.5-0.5	.43	.43			
Ts:														
Tobin--------	0-25	10	68	18-27	1.30-1.40	0.60-2.00	0.20-0.24	0.0-2.9	1.0-4.0	.32	.32	5	6	48
	25-33	9	64	18-35	1.35-1.50	0.60-2.00	0.17-0.20	3.0-5.9	1.0-4.0	.32	.32			
	33-60	9	64	18-35	1.35-1.45	0.60-2.00	0.18-0.22	3.0-5.9	0.5-0.5	.43	.43			
Uc:														
Uly----------	0-10	11	67	17-27	1.20-1.30	0.60-2.00	0.20-0.24	0.0-2.9	1.0-3.0	.32	.32	5	6	48
	10-22	9	66	20-30	1.20-1.30	0.60-2.00	0.18-0.22	0.0-2.9	---	.43	.43			
	22-60	10	68	18-27	1.10-1.20	0.60-2.00	0.18-0.22	0.0-2.9	---	.43	.43			
W:														
Water--------	---			---	---	---	---	---	---	---	---	-	---	0
Wa:														
Waldeck------	0-14	45	41	10-18	1.40-1.55	2.00-6.00	0.18-0.20	0.0-2.9	1.0-3.0	.28	.28	4	5	56
	14-41	68	20	8-16	1.50-1.60	2.00-6.00	0.12-0.17	0.0-2.9	---	.20	.20			
	41-60	97	1	1-4	1.55-1.65	5.95-19.98	0.05-0.07	0.0-2.9	---	.20	.24			

CHEMICAL PROPERTIES OF THE SOILS
Kiowa County, Kansas

The Chemical Properties table shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils. Depth to the upper and lower boundaries of each layer is indicated.

Cation−exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation−exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation−exchange capacity. Soils having a high cation−exchange capacity can retain cations. The ability to retain cations helps to prevent the pollution of ground water.

Effective cation−exchange capacity refers to the sum of extractable bases plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium−N volatilization.

Gypsum is expressed as a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water and can be dissolved and removed by water. Soils that have a high content of gypsum may collapse if the gypsum is removed by percolating water.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Sodium adsorption ratio (SAR) is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one−half of the Ca + Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced permeability and aeration, and a general degradation of soil structure.

CHEMICAL PROPERTIES OF THE SOILS--Continued
Kiowa County, Kansas

Map symbol and soil name	Depth	Cation-exchange capacity	Effective Cation Exchange Capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100g	pH	Pct	Pct	mmhos/cm		
007CF:								
Clairemont------	0-14	6.0-18	---	7.9-8.4	---	---	---	---
	14-60	7.0-21	---	7.9-8.4	---	---	---	---
025AB:								
Albion----------	0-8	3.0-10	---	5.6-6.5	0	0	0	0
	8-15	4.0-11	---	6.1-7.8	0	0	0	0
	15-22	1.0-9.0	---	6.1-8.4	0	0	0	0
	22-60	0.0-6.0	---	6.1-8.4	1-2	0	0	0
Shellabarger----	0-10	3.0-11	---	5.1-6.5	---	---	---	---
	10-60	7.0-16	---	6.1-7.8	1-2	---	---	---
	60-64	1.0-11	---	6.1-8.4	1-2	---	---	---
025PG:								
Penden----------	0-16	11-22	---	7.4-8.4	5-15	---	0.0-2.0	---
	16-28	9.0-21	---	7.9-8.4	15-30	---	0.0-2.0	---
	28-60	9.0-21	---	7.9-8.4	5-15	---	0.0-2.0	---
025SH:								
Shellabarger----	0-11	5.0-14	---	5.1-6.5	---	---	---	---
	11-29	7.0-16	---	6.1-7.8	1-5	---	---	---
	29-60	1.0-11	---	6.1-8.4	1-5	---	---	---
033AC:								
Abilene----------	0-8	8.0-18	---	6.6-8.4	---	0	---	0
	8-35	14-27	---	6.6-8.4	---	0	---	0
	35-60	8.0-27	---	7.9-8.4	---	0	---	0
033CK:								
Case------------	0-8	11-21	---	7.4-8.4	0-5	---	---	---
	8-60	7.0-21	---	7.4-8.4	5-25	---	---	---
033CS:								
Clark------------	0-10	11-21	---	7.4-8.4	0-5	---	---	---
	10-60	7.0-21	---	7.4-8.4	15-45	---	---	---
033CT:								
Clark------------	0-10	11-21	---	7.4-8.4	0-5	---	---	---
	10-60	7.0-21	---	7.4-8.4	15-45	---	---	---
033ED:								
Elandco----------	0-31	7.0-18	---	6.6-8.4	---	0	---	0
	31-60	7.0-21	---	7.4-8.4	---	0	---	0
033EF:								
Elandco----------	0-31	7.0-18	---	6.6-8.4	---	0	---	0
	31-60	7.0-21	---	7.4-8.4	---	0	---	0
033KC:								
Kanza------------	0-10	1.0-9.0	---	5.6-6.5	---	---	---	---
	10-60	0.0-7.0	---	5.6-8.4	---	---	---	---
033LN:								
Lincoln----------	0-10	2.0-9.0	---	7.4-8.4	---	---	---	---
	10-60	2.0-9.0	---	7.9-8.4	---	---	---	---
033QR:								
Quinlan----------	0-14	6.0-17	---	7.4-8.4	0-5	0	0	0
	>14	---	0.0-0.0	---	---	---	---	---
Woodward---------	0-30	4.0-12	---	6.6-8.4	0-5	0	0	0
	>30	---	0.0-0.0	---	---	---	---	---
033SH:								
Shellabarger----	0-11	3.0-11	---	5.1-6.5	---	---	---	---
	11-38	7.0-16	---	6.1-7.8	---	---	---	---
	38-60	1.0-11	---	6.1-8.4	---	---	---	---
033SM:								
Shellabarger----	0-11	3.0-11	---	5.1-6.5	---	---	---	---
	11-38	7.0-16	---	6.1-7.8	---	---	---	---
	38-60	1.0-11	---	6.1-8.4	---	---	---	---
047PA:								
Platte----------	0-9	4.0-14	---	6.6-8.4	---	0	0.0-2.0	0
	9-60	0.0-2.0	---	6.6-8.4	---	0	0.0-2.0	0
047WA:								
Waldeck----------	0-10	3.0-11	---	7.4-8.4	---	---	---	---
	10-28	3.0-10	---	7.4-8.4	---	---	---	---
	28-60	0.0-3.0	---	7.4-8.4	---	---	---	---
057HD:								
Holdrege---------	0-11	6.0-14	---	5.6-7.3	0	0	0	0
	11-33	11-21	---	6.6-7.8	1-5	0	0	0
	33-48	7.0-18	---	6.6-7.8	1-5	0	0	0
	48-66	6.0-12	---	7.4-8.4	1-5	0	0	0
057PR:								
Pratt------------	0-9	1.0-5.0	---	5.6-7.3	---	---	---	---
	9-28	1.0-7.0	---	5.6-7.3	---	---	---	---
	28-54	0.0-5.0	---	6.1-7.3	1-5	---	---	---
057PT:								
Pratt------------	0-9	1.0-5.0	---	5.6-7.3	---	---	---	---
	9-28	1.0-7.0	---	5.6-7.3	---	---	---	---
	28-54	0.0-5.0	---	6.1-7.3	1-5	---	---	---
Tivoli-----------	0-6	2.0-7.0	---	6.1-7.8	---	---	---	---
	6-60	0.0-6.0	---	6.1-8.4	1-5	---	---	---
057TV:								
Tivoli-----------	0-6	0.0-7.0	---	6.1-7.8	---	---	---	---
	6-60	0.0-6.0	---	6.1-8.4	---	---	---	---

CHEMICAL PROPERTIES OF THE SOILS--Continued
Kiowa County, Kansas

Map symbol and soil name	Depth	Cation-exchange capacity	Effective Cation Exchange Capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100g	pH	Pct	Pct	mmhos/cm		
151BC:								
Blanket----------	0-13	11-23	---	6.1-7.8	0	0	0	0
	13-46	14-30	---	6.1-8.4	---	0	0	0
	46-60	14-30	---	7.9-8.4	---	0	0	0
151BH:								
Blanket----------	0-13	6.0-18	---	6.1-7.8	0	0	0	0
	13-46	14-30	---	6.1-8.4	---	0	0	0
	46-60	14-30	---	7.9-8.4	---	0	0	0
151FE:								
Farnum-----------	0-11	3.0-10	---	5.6-7.3	---	---	---	---
	11-41	10-21	---	6.1-8.4	---	---	---	---
	41-60	4.0-18	---	6.6-8.4	---	---	---	---
151NM:								
Naron------------	0-11	3.0-10	---	5.6-7.3	---	---	---	---
	11-38	7.0-16	---	5.6-7.8	---	---	---	---
	38-60	0.0-9.0	---	6.1-8.4	---	---	---	---
151SE:								
Shellabarger-----	0-11	3.0-11	---	5.1-6.5	---	---	---	---
	11-34	7.0-16	---	6.1-7.8	---	---	---	---
	34-60	1.0-11	---	6.1-8.4	---	---	---	---
1324:								
Carway-----------	0-7	7.0-12	---	5.6-6.5	0	0	0	0
	7-10	12-18	---	6.1-7.3	0	0	0	0
	10-15	12-18	---	6.1-7.3	0	0	0	0
	15-22	12-18	---	6.1-7.3	0	0	0	0
	22-35	12-18	---	6.1-7.3	0	0	0	0
	35-40	24-35	---	6.6-7.8	0-5	0	0	0
	40-54	24-35	---	6.6-7.8	0-5	0	0	0
	54-63	24-35	---	6.6-7.8	0-5	0	0	0
	63-72	24-35	---	6.6-7.8	0-5	0	0	0
	72-80	9.0-16	---	6.6-7.8	0-5	0	0	0
Carbika----------	0-11	7.0-12	---	6.1-7.3	0	0	0	0
	11-15	28-38	---	6.1-8.4	0-5	0	0	0
	15-22	28-38	---	6.1-8.4	0-5	0	0	0
	22-34	12-16	---	6.1-8.4	0-5	0	0	0
	34-41	12-16	---	6.1-8.4	0-5	0	0	0
	41-60	12-16	---	6.1-8.4	0-5	0	0	0
	60-80	12-16	---	7.4-8.4	0-5	0	0	0
1725:								
Funmar-----------	0-6	7.0-19	---	6.1-7.3	0	0	0	0
	6-12	7.0-19	---	6.1-7.3	0	0	0	0
	12-17	13-19	---	6.6-7.3	0	0	0	0
	17-26	13-19	---	6.6-7.3	0	0	0	0
	26-32	13-19	---	6.6-7.3	0	0	0	0
	32-38	7.0-19	---	6.6-7.8	0	0	0	0
	38-54	24-41	---	6.6-7.8	0-5	0	0	0
	54-66	24-41	---	6.6-7.8	0-5	0	0	0
	66-80	11-18	---	6.6-7.8	0-5	0	0	0
Farnum-----------	0-5	9.0-15	---	5.6-7.3	0	0	0	0
	5-15	9.0-15	---	5.6-7.3	0	0	0	0
	15-21	8.0-18	---	6.1-7.8	0	0	0	0
	21-34	10-23	---	6.1-8.4	0	0	0	0
	34-48	10-23	---	6.1-8.4	0	0	0	0
	48-61	10-23	---	6.1-8.4	0	0	0	0
	61-73	10-23	---	6.1-8.4	0	0	0	0
	73-80	4.0-19	---	6.6-8.4	0	0	0	0
1726:								
Farnum-----------	0-5	9.0-15	---	5.6-7.3	0	0	0	0
	5-15	9.0-15	---	5.6-7.3	0	0	0	0
	15-21	8.0-18	---	6.1-7.8	0	0	0	0
	21-34	10-23	---	6.1-8.4	0	0	0	0
	34-48	10-23	---	6.1-8.4	0	0	0	0
	48-61	10-23	---	6.1-8.4	0	0	0	0
	61-73	10-23	---	6.1-8.4	0	0	0	0
	73-80	4.0-19	---	6.6-8.4	0	0	0	0
Funmar-----------	0-6	7.0-19	---	6.1-7.3	0	0	0	0
	6-12	7.0-19	---	6.1-7.3	0	0	0	0
	12-17	13-19	---	6.6-7.3	0	0	0	0
	17-26	13-19	---	6.6-7.3	0	0	0	0
	26-32	13-19	---	6.6-7.3	0	0	0	0
	32-38	7.0-19	---	6.6-7.8	0	0	0	0
	38-54	24-41	---	6.6-7.8	0-5	0	0	0
	54-66	24-41	---	6.6-7.8	0-5	0	0	0
	66-80	11-18	---	6.6-7.8	0-5	0	0	0
1985:								
Hayes------------	0-8	5.0-8.0	---	5.1-7.3	0	0	0	0
	8-14	6.0-10	---	6.1-7.3	0	0	0	0
	14-23	6.0-10	---	6.1-7.3	0	0	0	0
	23-34	6.0-10	---	6.1-7.3	0	0	0	0
	34-42	6.0-10	---	6.1-7.3	0	0	0	0
	42-47	6.0-10	---	6.1-7.3	0	0	0	0
	47-56	10-15	---	6.6-7.8	0	0	0	0
	56-69	24-35	---	6.6-7.8	0-5	0	0	0
	69-80	24-35	---	6.6-7.8	0-5	0	0	0

CHEMICAL PROPERTIES OF THE SOILS--Continued
Kiowa County, Kansas

Map symbol and soil name	Depth	Cation-exchange capacity	Effective Cation Exchange Capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100g	pH	Pct	Pct	mmhos/cm		
1986:								
Hayes----------	0-8	1.0-5.0	---	5.1-7.3	0	0	0	0
	8-14	6.0-10	---	6.1-7.3	0	0	0	0
	14-23	6.0-10	---	6.1-7.3	0	0	0	0
	23-34	6.0-10	---	6.1-7.3	0	0	0	0
	34-42	6.0-10	---	6.1-7.3	0	0	0	0
	42-47	6.0-10	---	6.1-7.3	0	0	0	0
	47-56	10-15	---	6.6-7.8	0	0	0	0
	56-69	24-35	---	6.6-7.8	0-5	0	0	0
	69-80	24-35	---	6.6-7.8	0-5	0	0	0
Solvay----------	0-5	1.0-7.0	---	6.1-6.5	0	0	0	0
	5-14	8.0-19	---	6.1-7.3	0	0	0	0
	14-23	8.0-19	---	6.1-7.3	0	0	0	0
	23-37	8.0-19	---	6.1-7.3	0	0	0	0
	37-58	5.0-12	---	6.1-7.3	0	0	0	0
	58-76	5.0-12	---	6.1-7.3	0	0	0	0
	76-80	5.0-12	---	6.1-7.3	0	0	0	0
1988:								
Hayes----------	0-8	5.0-8.0	---	5.1-7.3	0	0	0	0
	8-14	6.0-10	---	6.1-7.3	0	0	0	0
	14-23	6.0-10	---	6.1-7.3	0	0	0	0
	23-34	6.0-10	---	6.1-7.3	0	0	0	0
	34-42	6.0-10	---	6.1-7.3	0	0	0	0
	42-47	6.0-10	---	6.1-7.3	0	0	0	0
	47-56	10-15	---	6.6-7.8	0	0	0	0
	56-69	24-35	---	6.6-7.8	0-5	0	0	0
	69-80	24-35	---	6.6-7.8	0-5	0	0	0
2556:								
Langdon----------	0-8	0.0-3.0	---	5.1-7.3	0	0	0	0
	8-47	0.0-4.0	---	5.1-7.3	0	0	0	0
	47-64	0.0-1.0	---	5.1-7.3	0	0	0	0
	64-80	0.0-4.0	---	4.5-6.5	0	0	0	0
3512:								
Saltcreek-------	0-5	5.0-10	---	4.5-6.6	0	0	0	0
	5-10	5.0-10	---	4.5-6.6	0	0	0	0
	10-26	10-18	---	6.1-7.3	0	0	0	0
	26-39	10-18	---	6.1-7.3	0	0	0	0
	39-56	24-35	---	6.1-8.4	0-5	0	0	0
	56-66	24-35	---	6.1-8.4	0-5	0	0	0
	66-80	24-35	---	6.1-8.4	0-5	0	0	0
Naron----------	0-8	5.0-15	---	5.6-7.3	0	0	0	0
	8-14	5.0-15	---	5.6-7.3	0	0	0	0
	14-28	10-15	---	5.6-7.8	0	0	0	0
	28-39	10-15	---	5.6-7.8	0	0	0	0
	39-55	10-15	---	5.6-7.8	0	0	0	0
	55-66	5.0-10	---	6.1-8.4	0	0	0	0
	66-80	5.0-10	---	6.1-8.4	0	0	0	0
3540:								
Solvay----------	0-5	1.0-7.0	---	6.1-6.5	0	0	0	0
	5-14	8.0-19	---	6.1-7.3	0	0	0	0
	14-23	8.0-19	---	6.1-7.3	0	0	0	0
	23-37	8.0-19	---	6.1-7.3	0	0	0	0
	37-58	5.0-12	---	6.1-7.3	0	0	0	0
	58-76	5.0-12	---	6.1-7.3	0	0	0	0
	76-80	5.0-12	---	6.1-7.3	0	0	0	0
3640:								
Tivin----------	0-7	0.0-1.0	---	5.6-6.5	0	0	0	0
	7-18	0.0-1.0	---	6.1-7.3	0	0	0	0
	18-80	0.0-1.0	---	6.1-7.3	0	0	0	0
An:								
Albion----------	0-11	3.0-10	---	5.6-6.5	0	0	0	0
	11-24	4.0-11	---	6.1-7.8	0	0	0	0
	24-60	0.0-6.0	---	6.1-8.4	0	0	0	0
As:								
Albion----------	0-11	3.0-10	---	5.6-6.5	0	0	0	0
	11-24	4.0-11	---	6.1-7.8	0	0	0	0
	24-60	0.0-6.0	---	6.1-8.4	0	0	0	0
Shellabarger-----	0-12	3.0-11	---	5.1-6.5	---	---	---	---
	12-60	7.0-16	---	6.1-7.8	---	---	---	---
At:								
Attica----------	0-10	1.0-7.0	---	5.6-7.3	---	---	---	---
	10-30	3.0-11	---	5.6-6.5	---	---	---	---
	30-60	1.0-11	---	6.1-7.8	---	---	---	---
Ax:								
Attica----------	0-10	1.0-7.0	---	5.6-7.3	---	---	---	---
	10-30	3.0-11	---	5.6-6.5	---	---	---	---
	30-60	1.0-11	---	6.1-7.8	---	---	---	---
Carwile----------	0-15	2.0-13	---	5.1-7.3	---	---	---	---
	15-36	14-36	---	6.1-8.4	---	---	---	---
	36-60	8.0-27	---	6.6-8.4	---	---	---	---
BOP:								
Borrow Pits------	---	---	---	---	---	---	---	---

CHEMICAL PROPERTIES OF THE SOILS--Continued
Kiowa County, Kansas

Map symbol and soil name	Depth	Cation-exchange capacity	Effective Cation Exchange Capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100g	pH	Pct	Pct	mmhos/cm		
Ca:								
Canadian--------	0-14	2.0-13	---	5.6-7.3	0	0	0	0
	14-30	4.0-11	---	6.1-8.4	0	0	0	0
	30-60	2.0-11	---	6.1-8.4	0	0	0	0
Cc:								
Carwile---------	0-15	2.0-13	---	5.1-7.3	---	---	---	---
	15-36	14-36	---	6.1-8.4	---	---	---	---
	36-60	8.0-27	---	6.6-8.4	---	---	---	---
Ce:								
Case------------	0-6	11-21	---	7.4-8.4	0-5	---	---	---
	6-60	7.0-21	---	7.4-8.4	5-25	---	---	---
Cf:								
Case------------	0-6	11-21	---	7.4-8.4	0-5	---	---	---
	6-60	7.0-21	---	7.4-8.4	5-25	---	---	---
Cg:								
Case------------	0-6	11-21	---	7.4-8.4	0-5	---	---	---
	6-60	7.0-21	---	7.4-8.4	5-25	---	---	---
Canlon----------	0-5	5.0-18	---	7.4-8.4	---	0	0	0
	5-14	3.0-16	---	7.4-8.4	---	0	0	0
	>14	---	0.0-0.0	---	---	---	---	---
Ck:								
Clark-----------	0-5	6.0-18	---	7.4-8.4	0-5	---	---	---
	5-60	7.0-21	---	7.4-8.4	15-45	---	---	---
Cm:								
Clark-----------	0-10	6.0-18	---	7.4-8.4	0-5	---	---	---
	10-60	7.0-21	---	7.4-8.4	15-45	---	---	---
Co:								
Coly------------	0-5	7.0-16	---	7.4-8.4	---	0	0	0
	5-60	7.0-14	---	7.4-8.4	---	0	0	0
Cp:								
Coly------------	0-5	7.0-16	---	7.4-8.4	---	0	0	0
	5-60	7.0-14	---	7.4-8.4	---	0	0	0
Ct:								
Coly------------	0-5	7.0-16	---	7.4-8.4	---	0	0	0
	5-60	7.0-14	---	7.4-8.4	---	0	0	0
Tobin-----------	0-25	7.0-19	---	5.6-7.8	---	---	---	---
	25-32	7.0-24	---	7.4-8.4	---	---	---	---
	32-60	7.0-21	---	7.4-8.4	---	---	---	---
Da:								
Dale------------	0-16	6.0-18	---	6.1-7.8	0	0	0	0
	16-60	7.0-21	---	7.4-8.4	---	0	0	0
Fa:								
Farnum----------	0-11	6.0-18	---	5.6-7.3	---	---	---	---
	11-54	10-21	---	6.1-8.4	---	---	---	---
	54-60	4.0-18	---	6.6-8.4	---	---	---	---
Fb:								
Farnum----------	0-11	6.0-18	---	5.6-7.3	---	---	---	---
	11-51	10-21	---	6.1-8.4	---	---	---	---
	51-60	4.0-18	---	6.6-8.4	---	---	---	---
Ha:								
Harney----------	0-5	9.0-19	---	5.6-7.8	0	0	0	0
	5-28	14-25	---	6.1-8.4	0	0	0	0
	28-60	9.0-21	---	7.4-8.4	0	0	0	0
Hb:								
Harney----------	0-5	9.0-19	---	5.6-7.8	0	0	0	0
	5-28	14-25	---	6.1-8.4	0	0	0	0
	28-60	9.0-21	---	7.4-8.4	0	0	0	0
He:								
Hedville--------	0-11	3.0-16	---	5.6-7.3	0	0	0	0
	11-15	3.0-13	---	5.6-7.3	0	0	0	0
	>15	---	0.0-0.0	---	---	---	---	---
Rock Outcrop----	---	---	---	---	---	---	---	---
Ho:								
Holdrege--------	0-10	6.0-17	---	5.6-7.3	0	0	0	0
	10-27	11-21	---	6.6-7.8	0	0	0	0
	27-32	7.0-18	---	6.6-7.8	0	0	0	0
	32-60	6.0-12	---	7.4-8.4	---	0	0	0
Hp:								
Holdrege--------	0-10	6.0-17	---	5.6-7.3	0	0	0	0
	10-27	11-21	---	6.6-7.8	0	0	0	0
	27-32	7.0-18	---	6.6-7.8	0	0	0	0
	32-60	6.0-12	---	7.4-8.4	---	0	0	0
Kr:								
Krier-----------	0-5	2.0-8.0	---	7.4-9.0	---	---	2.0-8.0	---
	5-11	4.0-19	---	7.9-9.0	---	---	4.0-16.0	---
	11-60	0.0-3.0	---	7.4-9.0	---	---	2.0-8.0	---
Lh:								
Lancaster-------	0-13	5.0-18	---	5.6-6.5	0	0	0	0
	13-23	4.0-18	---	6.1-7.3	0	0	0	0
	>23	---	0.0-0.0	---	---	---	---	---
Hedville--------	0-11	3.0-16	---	5.6-7.3	0	0	0	0
	11-15	3.0-13	---	5.6-7.3	0	0	0	0
	>15	---	0.0-0.0	---	---	---	---	---

CHEMICAL PROPERTIES OF THE SOILS--Continued
Kiowa County, Kansas

Map symbol and soil name	Depth	Cation-exchange capacity	Effective Cation Exchange Capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100g	pH	Pct	Pct	mmhos/cm		
Ln:								
Lincoln	0-8	4.0-11	---	7.4-8.4	---	---	---	---
	8-60	2.0-9.0	---	7.9-8.4	---	---	---	---
M-W:								
Miscellaneous Water	---	---	---	---	---	---	---	---
Na:								
Naron	0-10	3.0-10	---	5.6-7.3	---	---	---	---
	10-48	7.0-16	---	5.6-7.8	---	---	---	---
	48-60	0.0-9.0	---	6.1-8.4	---	---	---	---
Nb:								
Naron	0-10	3.0-10	---	5.6-7.3	---	---	---	---
	10-48	7.0-16	---	5.6-7.8	---	---	---	---
	48-60	0.0-9.0	---	6.1-8.4	---	---	---	---
Ne:								
Ness	0-38	16-38	---	6.1-8.4	---	---	---	---
	38-60	8.0-24	---	7.4-8.4	---	---	---	---
Nw:								
New Cambria	0-12	16-39	---	6.6-8.4	---	---	---	---
	12-36	15-36	---	7.9-8.4	---	---	---	---
	36-60	12-30	---	7.9-8.4	---	---	---	---
Oe:								
Owens	0-6	16-37	---	6.6-8.4	---	---	0.0-2.0	---
	6-15	14-36	---	7.9-8.4	---	---	0.0-2.0	---
	>15	---	0.0-0.0	---	---	---	---	---
Pe:								
Plevna	0-9	3.0-13	---	6.6-8.4	0	0	0	0
	9-48	3.0-11	---	6.6-8.4	0	0	0	0
	48-60	0.0-4.0	---	6.6-8.4	0	0	0	0
Pr:								
Pratt	0-12	1.0-5.0	---	5.6-7.3	---	---	---	---
	12-36	1.0-7.0	---	5.6-7.3	---	---	---	---
	36-60	0.0-5.0	---	6.1-7.3	---	---	---	---
Ps:								
Pratt	0-12	1.0-5.0	---	5.6-7.3	---	---	---	---
	12-36	1.0-7.0	---	5.6-7.3	---	---	---	---
	36-60	0.0-5.0	---	6.1-7.3	---	---	---	---
Pt:								
Pratt	0-10	1.0-5.0	---	5.6-7.3	---	---	---	---
	10-32	1.0-7.0	---	5.6-7.3	---	---	---	---
	32-60	0.0-5.0	---	6.1-7.3	---	---	---	---
Tivoli	0-7	2.0-7.0	---	6.1-7.8	---	---	---	---
	7-60	0.0-6.0	---	6.1-8.4	---	---	---	---
Qw:								
Quinlan	0-15	6.0-17	---	7.4-8.4	---	0	0	0
	>15	---	0.0-0.0	---	---	---	---	---
Woodward	0-27	4.0-12	---	6.6-8.4	---	0	0	0
	>27	---	0.0-0.0	---	---	---	---	---
SAP:								
Sand Pit	---	---	---	---	---	---	---	---
Sh:								
Shellabarger	0-11	5.0-15	---	5.1-6.5	---	---	---	---
	11-60	7.0-16	---	6.1-7.8	---	---	---	---
Th:								
Tivoli	0-6	0.0-7.0	---	6.1-7.8	---	---	---	---
	6-60	0.0-6.0	---	6.1-8.4	---	---	---	---
To:								
Tobin	0-25	7.0-19	---	5.6-7.8	---	---	---	---
	25-33	7.0-24	---	7.4-8.4	---	---	---	---
	33-60	7.0-21	---	7.4-8.4	---	---	---	---
Ts:								
Tobin	0-25	7.0-19	---	5.6-7.8	---	---	---	---
	25-33	7.0-24	---	7.4-8.4	---	---	---	---
	33-60	7.0-21	---	7.4-8.4	---	---	---	---
Uc:								
Uly	0-10	7.0-18	---	6.1-7.8	0	0	0	0
	10-22	8.0-18	---	6.1-8.4	0	0	0	0
	22-60	7.0-16	---	7.4-8.4	---	0	0	0
W:								
Water	---	---	---	---	---	---	---	---
Wa:								
Waldeck	0-14	4.0-13	---	7.4-8.4	---	---	---	---
	14-41	3.0-10	---	7.4-8.4	---	---	---	---
	41-60	0.0-3.0	---	7.4-8.4	---	---	---	---

WATER FEATURES
Kiowa County, Kansas

The Water Features table gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations. Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

The months in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. The Water Features table indicates, by month, depth to the top (upper limit) and base (lower limit) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table. Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The Water Features table indicates surface water depth and the duration and frequency of ponding. Duration is expressed as very brief if less than 2 days, brief if 2 to 7 days, long if 7 to 30 days, and very long if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. None means that ponding is not probable; rare that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); occasional that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and frequent that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and frequency are estimated. Duration is expressed as extremely brief if 0.1 hour to 4 hours, very brief if 4 hours to 2 days, brief if 2 to 7 days, long if 7 to 30 days, and very long if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. None means that flooding is not probable; very rare that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); rare that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); occasional that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); frequent that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and very frequent that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

WATER FEATURES--Continued
Kiowa County, Kansas

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydrologic group	Month	Soil Saturation		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
007CF:									
Clairemont	B								
		April	---	---	---	---	---	Very brief	Frequent
		May	---	---	---	---	---	Very brief	Frequent
		June	---	---	---	---	---	Very brief	Frequent
		July	---	---	---	---	---	Very brief	Frequent
		August	---	---	---	---	---	Very brief	Frequent
		September	---	---	---	---	---	Very brief	Frequent
		October	---	---	---	---	---	Very brief	Frequent
		November	---	---	---	---	---	Very brief	Frequent
025AB:									
Albion	B		---	---	---	---	---	---	---
Shellabarger	B		---	---	---	---	---	---	---
025PG:									
Penden	B		---	---	---	---	---	---	---
025SH:									
Shellabarger	B		---	---	---	---	---	---	---
033AC:									
Abilene	C		---	---	---	---	---	---	---
033CK:									
Case	B		---	---	---	---	---	---	---
033CS:									
Clark	B		---	---	---	---	---	---	---
033CT:									
Clark	B		---	---	---	---	---	---	---
033ED:									
Elandco	B								
		January	---	---	---	---	---	Brief	Occasional
		February	---	---	---	---	---	Brief	Occasional
		March	---	---	---	---	---	Brief	Occasional
		April	---	---	---	---	---	Brief	Occasional
		May	---	---	---	---	---	Brief	Occasional
		October	---	---	---	---	---	Brief	Occasional
		November	---	---	---	---	---	Brief	Occasional
		December	---	---	---	---	---	Brief	Occasional
033EF:									
Elandco	B								
		January	---	---	---	---	---	Brief	Frequent
		February	---	---	---	---	---	Brief	Frequent
		March	---	---	---	---	---	Brief	Frequent
		April	---	---	---	---	---	Brief	Frequent
		May	---	---	---	---	---	Brief	Frequent
		October	---	---	---	---	---	Brief	Frequent
		November	---	---	---	---	---	Brief	Frequent
		December	---	---	---	---	---	Brief	Frequent
033KC:									
Kanza	D								
		January	0.0-3.0	>6.0	---	---	---	Very brief	Frequent
		February	0.0-3.0	>6.0	---	---	---	Very brief	Frequent
		March	0.0-3.0	>6.0	---	---	---	Very brief	Frequent
		April	---	---	---	---	---	Very brief	Frequent
		May	---	---	---	---	---	Very brief	Frequent
		June	---	---	---	---	---	Very brief	Frequent
		July	---	---	---	---	---	Very brief	Frequent
		August	---	---	---	---	---	Very brief	Frequent
		September	---	---	---	---	---	Very brief	Frequent
		October	---	---	---	---	---	Very brief	Frequent
		November	---	---	---	---	---	Very brief	Frequent
		December	0.0-3.0	>6.0	---	---	---	Very brief	Frequent
033LN:									
Lincoln	A								
		January	5.0-6.0	>6.0	---	---	---	---	None
		February	5.0-6.0	>6.0	---	---	---	---	None
		March	5.0-6.0	>6.0	---	---	---	---	None
		April	5.0-6.0	>6.0	---	---	---	Very brief	Occasional
		May	5.0-6.0	>6.0	---	---	---	Very brief	Occasional
		June	---	---	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
		August	---	---	---	---	---	Very brief	Occasional
		September	---	---	---	---	---	Very brief	Occasional
		October	---	---	---	---	---	Very brief	Occasional
		November	5.0-6.0	>6.0	---	---	---	---	None
		December	5.0-6.0	>6.0	---	---	---	---	None
033QR:									
Quinlan	C		---	---	---	---	---	---	---

WATER FEATURES--Continued
Kiowa County, Kansas

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydrologic group	Month	Soil Saturation		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
Woodward	B		---	---	---	---	---	---	---
033SH:									
Shellabarger	B		---	---	---	---	---	---	---
033SM:									
Shellabarger	B		---	---	---	---	---	---	---
047PA:									
Platte	B								
		February	1.0-2.0	>6.0	---	---	---	---	None
		March	1.0-2.0	>6.0	---	---	---	---	None
		April	1.0-2.0	>6.0	---	---	---	Brief	Occasional
		May	1.0-2.0	>6.0	---	---	---	Brief	Occasional
		June	1.0-2.0	>6.0	---	---	---	Brief	Occasional
		July	---	---	---	---	---	Brief	Occasional
		August	---	---	---	---	---	Brief	Occasional
		September	---	---	---	---	---	Brief	Occasional
047WA:									
Waldeck	C								
		January	2.0-4.0	>6.0	---	---	---	---	None
		February	2.0-4.0	>6.0	---	---	---	---	None
		March	2.0-4.0	>6.0	---	---	---	---	None
		April	2.0-4.0	>6.0	---	---	---	Brief	Occasional
		May	---	---	---	---	---	Brief	Occasional
		June	---	---	---	---	---	Brief	Occasional
		July	---	---	---	---	---	Brief	Occasional
		August	---	---	---	---	---	Brief	Occasional
		September	---	---	---	---	---	Brief	Occasional
		October	2.0-4.0	>6.0	---	---	---	---	None
		November	2.0-4.0	>6.0	---	---	---	---	None
		December	2.0-4.0	>6.0	---	---	---	---	None
057HD:									
Holdrege	B		---	---	---	---	---	---	---
057PR:									
Pratt	A		---	---	---	---	---	---	---
057PT:									
Pratt	A		---	---	---	---	---	---	---
Tivoli	A		---	---	---	---	---	---	---
057TV:									
Tivoli	A		---	---	---	---	---	---	---
151BC:									
Blanket	C		---	---	---	---	---	---	---
151BH:									
Blanket	C		---	---	---	---	---	---	---
151FE:									
Farnum	B		---	---	---	---	---	---	---
151NM:									
Naron	B		---	---	---	---	---	---	---
151SE:									
Shellabarger	B		---	---	---	---	---	---	---
1324:									
Carway	D								
		January	0.0	2.0	0.3-1.0	Long	Occasional	---	None
		February	0.0	2.0	0.3-1.0	Long	Occasional	---	None
		March	0.0	2.0	0.3-1.0	Long	Frequent	---	None
		April	0.0	2.0	0.3-1.0	Long	Frequent	---	None
		May	0.0	2.0	0.3-1.0	Long	Frequent	---	None
		June	0.0	2.0	0.3-1.0	Long	Frequent	---	None
		July	---	---	0.3-1.0	Long	Occasional	---	None
		August	---	---	0.3-1.0	Brief	Rare	---	None
		September	---	---	0.3-1.0	Brief	Rare	---	None
		October	---	---	0.3-1.0	Long	Occasional	---	None
		November	---	---	0.3-1.0	Long	Occasional	---	None
		December	0.0	2.0	0.3-1.0	Long	Occasional	---	None

WATER FEATURES--Continued
Kiowa County, Kansas

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydrologic group	Month	Soil Saturation		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
Carbika	D								
		January	0.0	2.0	0.3-1.0	Long	Occasional	---	None
		February	0.0	2.0	0.3-1.0	Long	Occasional	---	None
		March	0.0	2.0	0.3-1.0	Long	Frequent	---	None
		April	0.0	2.0	0.3-1.0	Long	Frequent	---	None
		May	0.0	2.0	0.3-1.0	Long	Frequent	---	None
		June	0.0	2.0	0.3-1.0	Long	Frequent	---	None
		July	---	---	0.3-1.0	Long	Occasional	---	None
		August	---	---	0.0-0.5	Brief	Rare	---	None
		September	---	---	0.0-0.5	Brief	Rare	---	None
		October	---	---	0.3-1.0	Long	Occasional	---	None
		November	---	---	0.3-1.0	Long	Occasional	---	None
		December	0.0	2.0	0.3-1.0	Long	Occasional	---	None
1725:									
Farnum	B		---	---	---	---	---	---	---
Funmar	C		---	---	---	---	---	---	---
1726:									
Farnum	B		---	---	---	---	---	---	---
Funmar	C		---	---	---	---	---	---	---
1985:									
Hayes	B		---	---	---	---	---	---	---
1986:									
Hayes	B		---	---	---	---	---	---	---
Solvay	D								
		February	2.0-4.0	>6.0	---	---	---	---	None
		March	2.0-4.0	>6.0	---	---	---	---	None
		April	2.0-4.0	>6.0	---	---	---	---	None
		May	2.0-4.0	>6.0	---	---	---	---	None
1988:									
Hayes	B		---	---	---	---	---	---	---
2556:									
Langdon	A		---	---	---	---	---	---	---
3512:									
Saltcreek	C		---	---	---	---	---	---	---
Naron	B		---	---	---	---	---	---	---
3540:									
Solvay	D								
		February	2.0-4.0	>6.0	---	---	---	---	None
		March	2.0-4.0	>6.0	---	---	---	---	None
		April	2.0-4.0	>6.0	---	---	---	---	None
		May	2.0-4.0	>6.0	---	---	---	---	None
3640:									
Tivin	A		---	---	---	---	---	---	---
An:									
Albion	B		---	---	---	---	---	---	---
As:									
Albion	B		---	---	---	---	---	---	---
Shellabarger	B		---	---	---	---	---	---	---
At:									
Attica	B		---	---	---	---	---	---	---
Ax:									
Attica	B		---	---	---	---	---	---	---
Carwile	D								
		January	0.0	>6.0	0.0-1.0	Brief	---	---	None
		February	0.0	>6.0	0.0-1.0	Brief	---	---	None
		March	0.0	>6.0	0.0-1.0	Brief	---	---	None
		April	0.0	>6.0	0.0-1.0	Brief	---	---	None
		October	0.0	>6.0	0.0-1.0	Brief	---	---	None
		November	0.0	>6.0	0.0-1.0	Brief	---	---	None
		December	0.0	>6.0	0.0-1.0	Brief	---	---	None
BOP:									
Borrow Pits	---		---	---	---	---	---	---	---
Ca:									

WATER FEATURES--Continued
Kiowa County, Kansas

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydrologic group	Month	Soil Saturation		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
Canadian	B								
		January	---	---	---	---	---	---	Rare
		February	---	---	---	---	---	---	Rare
		March	---	---	---	---	---	---	Rare
		April	---	---	---	---	---	---	Rare
		May	---	---	---	---	---	---	Rare
		June	---	---	---	---	---	---	Rare
		July	---	---	---	---	---	---	Rare
		August	---	---	---	---	---	---	Rare
		September	---	---	---	---	---	---	Rare
		October	---	---	---	---	---	---	Rare
		November	---	---	---	---	---	---	Rare
		December	---	---	---	---	---	---	Rare
			---	---	---	---	---	---	---
Cc:									
Carwile	D								
		January	0.0	>6.0	0.0-1.0	Long	---	---	None
		February	0.0	>6.0	0.0-1.0	Long	---	---	None
		March	0.0	>6.0	0.0-1.0	Long	---	---	None
		April	0.0	>6.0	0.0-1.0	Long	---	---	None
		May	---	---	0.0-	---	---	---	None
		June	---	---	0.0-	---	---	---	None
		July	---	---	0.0-	---	---	---	None
		August	---	---	0.0-	---	---	---	None
		September	---	---	0.0-	---	---	---	None
		October	0.0	>6.0	0.0-1.0	Long	---	---	None
		November	0.0	>6.0	0.0-1.0	Long	---	---	None
		December	0.0	>6.0	0.0-1.0	Long	---	---	None
Ce:									
Case	B								
			---	---	---	---	---	---	---
Cf:									
Case	B								
			---	---	---	---	---	---	---
Cg:									
Case	B								
			---	---	---	---	---	---	---
Canlon	D								
			---	---	---	---	---	---	---
Ck:									
Clark	B								
			---	---	---	---	---	---	---
Cm:									
Clark	B								
			---	---	---	---	---	---	---
Co:									
Coly	B								
			---	---	---	---	---	---	---
Cp:									
Coly	B								
			---	---	---	---	---	---	---
Ct:									
Coly	B								
			---	---	---	---	---	---	---
Tobin	B								
		March	---	---	---	---	---	Very brief	Frequent
		April	---	---	---	---	---	Very brief	Frequent
		May	---	---	---	---	---	Very brief	Frequent
		June	---	---	---	---	---	Very brief	Frequent
		July	---	---	---	---	---	Very brief	Frequent
		August	---	---	---	---	---	Very brief	Frequent
		September	---	---	---	---	---	Very brief	Frequent
		October	---	---	---	---	---	Very brief	Frequent
		November	---	---	---	---	---	Very brief	Frequent
		December	---	---	---	---	---	Very brief	Frequent
Da:									
Dale	B								
		January	---	---	---	---	---	---	Rare
		February	---	---	---	---	---	---	Rare
		March	---	---	---	---	---	---	Rare
		April	---	---	---	---	---	---	Rare
		May	---	---	---	---	---	---	Rare
		June	---	---	---	---	---	---	Rare
		July	---	---	---	---	---	---	Rare
		August	---	---	---	---	---	---	Rare
		September	---	---	---	---	---	---	Rare
		October	---	---	---	---	---	---	Rare
		November	---	---	---	---	---	---	Rare
		December	---	---	---	---	---	---	Rare
			---	---	---	---	---	---	---
Fa:									
Farnum	B								
			---	---	---	---	---	---	---
Fb:									

WATER FEATURES--Continued
Kiowa County, Kansas

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydrologic group	Month	Soil Saturation		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
Farnum	B		---	---	---	---	---	---	---
Ha:									
Harney	B		---	---	---	---	---	---	---
Hb:									
Harney	B		---	---	---	---	---	---	---
He:									
Hedville	D		---	---	---	---	---	---	---
Rock Outcrop	D		---	---	---	---	---	---	---
Ho:									
Holdrege	B		---	---	---	---	---	---	---
Hp:									
Holdrege	B		---	---	---	---	---	---	---
Kr:									
Krier	D								
		March	1.0-3.0	>6.0	---	---	---	Very brief	Occasional
		April	1.0-3.0	>6.0	---	---	---	Very brief	Occasional
		May	1.0-3.0	>6.0	---	---	---	Very brief	Occasional
		June	1.0-3.0	>6.0	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
Lh:									
Lancaster	B		---	---	---	---	---	---	---
Hedville	D		---	---	---	---	---	---	---
Ln:									
Lincoln	A								
		January	5.0-6.0	>6.0	---	---	---	---	None
		February	5.0-6.0	>6.0	---	---	---	---	None
		March	5.0-6.0	>6.0	---	---	---	---	None
		April	5.0-6.0	>6.0	---	---	---	Very brief	Occasional
		May	5.0-6.0	>6.0	---	---	---	Very brief	Occasional
		June	---	---	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
		August	---	---	---	---	---	Very brief	Occasional
		September	---	---	---	---	---	Very brief	Occasional
		October	---	---	---	---	---	Very brief	Occasional
		November	5.0-6.0	>6.0	---	---	---	---	None
		December	5.0-6.0	>6.0	---	---	---	---	None
M-W:									
Miscellaneous Water	---		---	---	---	---	---	---	---
Na:									
Naron	B		---	---	---	---	---	---	---
Nb:									
Naron	B		---	---	---	---	---	---	---
Ne:									
Ness	D								
		March	0.0	>6.0	0.0-1.0	Long	Frequent	---	None
		April	0.0	>6.0	0.0-1.0	Long	Frequent	---	None
		May	0.0	>6.0	0.0-1.0	Long	Frequent	---	None
		June	0.0	>6.0	0.0-1.0	Long	Frequent	---	None
Nw:									
New Cambria	C								
		January	---	---	---	---	---	---	Rare
		February	---	---	---	---	---	---	Rare
		March	---	---	---	---	---	Very brief	Rare
		April	---	---	---	---	---	Very brief	Rare
		May	---	---	---	---	---	Very brief	Rare
		June	---	---	---	---	---	Very brief	Rare
		July	---	---	---	---	---	Very brief	Rare
		August	---	---	---	---	---	Very brief	Rare
		September	---	---	---	---	---	Very brief	Rare
		October	---	---	---	---	---	Very brief	Rare
		November	---	---	---	---	---	---	Rare
		December	---	---	---	---	---	---	Rare
Oe:									
Owens	D		---	---	---	---	---	---	---
Pe:									

WATER FEATURES--Continued
Kiowa County, Kansas

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydrologic group	Month	Soil Saturation		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
Plevna	D								
		January	0.0-2.0	>6.0	---	---	---	---	None
		February	0.0-2.0	>6.0	---	---	---	---	None
		March	0.0-2.0	>6.0	---	---	---	Long	Frequent
		April	0.0-2.0	>6.0	---	---	---	Long	Frequent
		May	0.0-2.0	>6.0	---	---	---	Long	Frequent
		June	0.0-2.0	>6.0	---	---	---	Long	Frequent
		July	0.0-2.0	>6.0	---	---	---	Long	Frequent
		August	0.0-2.0	>6.0	---	---	---	Long	Frequent
		September	0.0-2.0	>6.0	---	---	---	Long	Frequent
		October	0.0-2.0	>6.0	---	---	---	Long	Frequent
		November	0.0-2.0	>6.0	---	---	---	---	None
		December	0.0-2.0	>6.0	---	---	---	---	None
Pr:									
Pratt	A		---	---	---	---	---	---	---
Ps:									
Pratt	A		---	---	---	---	---	---	---
Pt:									
Pratt	A		---	---	---	---	---	---	---
Tivoli	A		---	---	---	---	---	---	---
Qw:									
Quinlan	C		---	---	---	---	---	---	---
Woodward	B		---	---	---	---	---	---	---
SAP:									
Sand Pit	---		---	---	---	---	---	---	---
Sh:									
Shellabarger	B		---	---	---	---	---	---	---
Th:									
Tivoli	A		---	---	---	---	---	---	---
To:									
Tobin	B								
		March	---	---	---	---	---	Very brief	Frequent
		April	---	---	---	---	---	Very brief	Frequent
		May	---	---	---	---	---	Very brief	Frequent
		June	---	---	---	---	---	Very brief	Frequent
		July	---	---	---	---	---	Very brief	Frequent
		August	---	---	---	---	---	Very brief	Frequent
		September	---	---	---	---	---	Very brief	Frequent
		October	---	---	---	---	---	Very brief	Frequent
		November	---	---	---	---	---	Very brief	Frequent
		December	---	---	---	---	---	Very brief	Frequent
Ts:									
Tobin	B								
		March	---	---	---	---	---	Very brief	Occasional
		April	---	---	---	---	---	Very brief	Occasional
		May	---	---	---	---	---	Very brief	Occasional
		June	---	---	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
		August	---	---	---	---	---	Very brief	Occasional
		September	---	---	---	---	---	Very brief	Occasional
		October	---	---	---	---	---	Very brief	Occasional
		November	---	---	---	---	---	Very brief	Occasional
		December	---	---	---	---	---	Very brief	Occasional
Uc:									
Uly	B		---	---	---	---	---	---	---
W:									
Water	---		---	---	---	---	---	---	---
Wa:									
Waldeck	C								
		January	2.0-4.0	>6.0	---	---	---	---	None
		February	2.0-4.0	>6.0	---	---	---	---	None
		March	2.0-4.0	>6.0	---	---	---	Brief	Occasional
		April	2.0-4.0	>6.0	---	---	---	Brief	Occasional
		May	---	---	---	---	---	Brief	Occasional
		June	---	---	---	---	---	Brief	Occasional
		July	---	---	---	---	---	Brief	Occasional
		August	---	---	---	---	---	Brief	Occasional
		September	---	---	---	---	---	Brief	Occasional
		October	2.0-4.0	>6.0	---	---	---	Brief	Occasional
		November	2.0-4.0	>6.0	---	---	---	---	None
		December	2.0-4.0	>6.0	---	---	---	---	None

SOIL FEATURES
Kiowa County, Kansas

The following table gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A restrictive layer is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. Depth to top is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as low, moderate, or high, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as low, moderate, or high. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

SOIL FEATURES--Continued
Kiowa County, Kansas

Map symbol and soil name	Restrictive layer				Potential for Frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated Steel	Concrete
		In	In				
007CF:							
Clairemont------	---	---	---	---	Low	Moderate	Low
025AB:							
Albion----------	---	---	---	---	---	Low	Low
Shellabarger----	---	---	---	---	---	Low	Low
025PG:							
Penden----------	---	---	---	---	Low	Moderate	Low
025SH:							
Shellabarger----	---	---	---	---	None	Low	Low
033AC:							
Abilene---------	---	---	---	---	Low	High	Low
033CK:							
Case------------	---	---	---	---	None	Moderate	Low
033CS:							
Clark-----------	---	---	---	---	Low	Moderate	Low
033CT:							
Clark-----------	---	---	---	---	Low	Moderate	Low
033ED:							
Elandco---------	---	---	---	---	Low	Moderate	Low
033EF:							
Elandco---------	---	---	---	---	Low	Moderate	Low
033KC:							
Kanza-----------	---	---	---	---	Low	High	Moderate
033LN:							
Lincoln---------	---	---	---	---	Low	Low	Low
033QR:							
Quinlan---------	10-20	Bedrock (paralithic)	---	Extremely weakly cemented	None	Moderate	Low
Woodward--------	20-40	Bedrock (paralithic)	---	Extremely weakly cemented	None	Low	Low
033SH:							
Shellabarger----	---	---	---	---	Low	Low	Moderate
033SM:							
Shellabarger----	---	---	---	---	Low	Low	Moderate
047PA:							
Platte----------	---	---	---	---	Low	High	Moderate
047WA:							
Waldeck---------	---	---	---	---	Low	Moderate	Low
057HD:							
Holdrege--------	---	---	---	---	Low	Low	Low
057PR:							
Pratt-----------	---	---	---	---	Low	Low	Moderate
057PT:							
Pratt-----------	---	---	---	---	Low	Low	Moderate
Tivoli----------	---	---	---	---	Low	Low	Low
057TV:							
Tivoli----------	---	---	---	---	Low	Low	Low
151BC:							
Blanket---------	---	---	---	---	Low	High	Low
151BH:							
Blanket---------	---	---	---	---	Low	High	Low
151FE:							
Farnum----------	---	---	---	---	Low	Moderate	Low
151NM:							
Naron-----------	---	---	---	---	Low	Low	Low
151SE:							
Shellabarger----	---	---	---	---	Low	Low	Moderate
1324:							
Carway----------	---	---	---	---	Low	High	Moderate
Carbika---------	---	---	---	---	Low	Moderate	Low
1725:							
Farnum----------	---	---	---	---	Low	Moderate	Low
Funmar----------	---	---	---	---	Low	Moderate	Low
1726:							
Farnum----------	---	---	---	---	Low	Moderate	Low
Funmar----------	---	---	---	---	Low	Moderate	Low
1985:							
Hayes-----------	---	---	---	---	Low	Moderate	Low
1986:							
Hayes-----------	---	---	---	---	Low	Moderate	Low
Solvay----------	---	---	---	---	Low	High	Moderate
1988:							
Hayes-----------	---	---	---	---	Low	Moderate	Low
2556:							
Langdon---------	---	---	---	---	Low	Low	Low
3512:							
Saltcreek-------	---	---	---	---	Low	Moderate	Low
Naron-----------	---	---	---	---	Low	Low	Low
3540:							
Solvay----------	---	---	---	---	Low	High	Moderate
3640:							
Tivin-----------	---	---	---	---	Low	Low	Low
An:							
Albion----------	---	---	---	---	Low	Low	Low
As:							
Albion----------	---	---	---	---	Low	Low	Low
Shellabarger----	---	---	---	---	Low	Low	Moderate

SOIL FEATURES--Continued
Kiowa County, Kansas

Map symbol and soil name	Restrictive layer				Potential for Frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated Steel	Concrete
		In	In				
At:							
Attica	---	---	---	---	Moderate	Low	Low
Ax:							
Attica	---	---	---	---	Low	Low	Low
Carwile	---	---	---	---	Low	High	Moderate
BOP:							
Borrow Pits	---	---	---	---	---	---	---
Ca:							
Canadian	---	---	---	---	---	Low	Low
Cc:							
Carwile	---	---	---	---	---	High	Moderate
Ce:							
Case	---	---	---	---	Low	Moderate	Low
Cf:							
Case	---	---	---	---	Low	Moderate	Low
Cg:							
Case	---	---	---	---	Low	Moderate	Low
Canlon	10-20	Bedrock (lithic)	---	Indurated	Low	Low	Low
Ck:							
Clark	---	---	---	---	Low	Moderate	Low
Cm:							
Clark	---	---	---	---	Low	Moderate	Low
Co:							
Coly	---	---	---	---	Low	High	Low
Cp:							
Coly	---	---	---	---	Low	High	Low
Ct:							
Coly	---	---	---	---	Low	High	Low
Tobin	---	---	---	---	Low	Low	Low
Da:							
Dale	---	---	---	---	Low	Moderate	Low
Fa:							
Farnum	---	---	---	---	---	Moderate	Low
Fb:							
Farnum	---	---	---	---	Low	Moderate	Low
Ha:							
Harney	---	---	---	---	Low	High	Low
Hb:							
Harney	---	---	---	---	Low	High	Low
He:							
Hedville	4-20	Bedrock (lithic)	---	Strongly cemented	Low	Low	Moderate
Rock Outcrop	---	---	---	---	Low	---	---
Ho:							
Holdrege	---	---	---	---	Moderate	Low	Low
Hp:							
Holdrege	---	---	---	---	Moderate	Low	Low
Kr:							
Krier	---	---	---	---	Low	High	Low
Lh:							
Lancaster	20-40	Bedrock (paralithic)	---	Moderately cemented	Low	Low	Moderate
Hedville	4-20	Bedrock (lithic)	---	Strongly cemented	Low	Low	Moderate
Ln:							
Lincoln	---	---	---	---	Low	Low	Low
M-W:							
Miscellaneous Water	---	---	---	---	---	---	---
Na:							
Naron	---	---	---	---	Low	Low	Low
Nb:							
Naron	---	---	---	---	Low	Low	Low
Ne:							
Ness	---	---	---	---	Low	High	Low
Nw:							
New Cambria	---	---	---	---	Low	High	Low
Oe:							
Owens	10-20	Bedrock (paralithic)	---	---	Low	High	Low
Pe:							
Plevna	---	---	---	---	Low	High	Low
Pr:							
Pratt	---	---	---	---	Low	Low	Moderate
Ps:							
Pratt	---	---	---	---	---	Low	Moderate
Pt:							
Pratt	---	---	---	---	Low	Low	Moderate
Tivoli	---	---	---	---	Low	Low	Low
Qw:							
Quinlan	10-20	Bedrock (paralithic)	---	Extremely weakly cemented	Low	Moderate	Low
Woodward	20-40	Bedrock (paralithic)	---	Extremely weakly cemented	Low	Low	Low
SAP:							
Sand Pit	---	---	---	---	---	---	---
Sh:							
Shellabarger	---	---	---	---	Low	Low	Moderate

SOIL FEATURES--Continued
Kiowa County, Kansas

Map symbol and soil name	Restrictive layer				Potential for Frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated Steel	Concrete
		In	In				
Th:							
Tivoli----------	---	---	---	---	Low	Low	Low
To:							
Tobin----------	---	---	---	---	Low	Low	Low
Ts:							
Tobin----------	---	---	---	---	Moderate	Low	Low
Uc:							
Uly----------	---	---	---	---	Low	High	Low
W:							
Water----------	---	---	---	---	---	---	---
Wa:							
Waldeck---------	---	---	---	---	Low	Moderate	Low

WATER MANAGEMENT
Kiowa County, Kansas

The soils of the survey area are rated in the Water Management table according to limitations that affect their suitability for water management. Soils are rated for pond reservoir areas, drainage, irrigation, terraces and diversions, and grassed waterways. Restrictive features that affect each soil for the specified use is also provided in the table.

The ratings in the table are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. Not limited indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. Slightly limited indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. Moderately limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. Limited indicates that the soil has one or more features that are significant limitations for the specified use. The limitations can be overcome, but generally require special design, soil reclamation, or installation procedures that may result in additional expense. Fair performance and moderate to high maintenance can be expected. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Limitation class terms, such as very limited or limited, etc., limitation ratings, and numerical ratings are shown for each soil feature listed. As many as three soil features may be listed for each soil component if applicable. The overall limitation rating for the soil component is based on the most severe limitation.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorablecompaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects theamount of usable material. It also affects traffic ability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditch banks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a very limited hazard of wind erosion or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, which conduct surface water to outlets at a non-erosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts and sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

WATER MANAGEMENT--Continued
Kiowa County, Kansas

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Features affecting--			
	Drainage	Irrigation	Terraces and diversions	Grassed waterways
007CF:				
Clairemont	Limitation: deep to water	Limitation: erodes easily flooding	Limitation: erodes easily	Limitation: erodes easily
025AB:				
Albion	Limitation: deep to water	Limitation: slope soil blowing droughty	Limitation: slope too sandy soil blowing	Limitation: slope droughty
Shellabarger	Limitation: deep to water	Limitation: slope soil blowing	Limitation: slope soil blowing	Limitation: slope
025PG:				
Penden	Limitation: deep to water	Limitation: slope	Limitation: slope	Limitation: slope
025SH:				
Shellabarger	Limitation: deep to water	Limitation: slope	Limitation: too sandy	Favorable
033AC:				
Abilene	Limitation: deep to water	Limitation: erodes easily	Limitation: erodes easily	Limitation: erodes easily
033CK:				
Case	Limitation: deep to water	Limitation: slope	Favorable	Favorable
033CS:				
Clark	Limitation: deep to water	Favorable	Favorable	Favorable
033CT:				
Clark	Limitation: deep to water	Limitation: slope	Favorable	Favorable
033ED:				
Elandco	Limitation: deep to water	Limitation: erodes easily flooding	Limitation: erodes easily	Limitation: erodes easily
033EF:				
Elandco	Limitation: deep to water	Limitation: erodes easily flooding	Limitation: erodes easily	Limitation: erodes easily
033KC:				
Kanza	Limitation: flooding cutbanks cave	Limitation: fast intake wetness droughty	Limitation: too sandy wetness soil blowing	Limitation: wetness droughty
033LN:				
Lincoln	Limitation: deep to water	Limitation: fast intake soil blowing droughty	Limitation: too sandy soil blowing	Limitation: droughty
033QR:				
Quinlan	Limitation: deep to water	Limitation: erodes easily slope depth to rock	Limitation: erodes easily slope depth to rock	Limitation: erodes easily slope depth to rock
Woodward	Limitation: deep to water	Limitation: erodes easily slope depth to rock	Limitation: erodes easily slope depth to rock	Limitation: erodes easily slope depth to rock
033SH:				
Shellabarger	Limitation: deep to water	Limitation: soil blowing	Limitation: soil blowing	Favorable
033SM:				
Shellabarger	Limitation: deep to water	Limitation: slope soil blowing	Limitation: soil blowing	Favorable
047PA:				
Platte	Limitation: flooding cutbanks cave	Limitation: rooting depth wetness droughty	Limitation: too sandy wetness	Limitation: rooting depth wetness droughty
047WA:				
Waldeck	Limitation: flooding cutbanks cave	Limitation: flooding wetness soil blowing	Limitation: too sandy wetness soil blowing	Favorable
057HD:				
Holdrege	Limitation: deep to water	Limitation: soil blowing	Limitation: erodes easily soil blowing	Limitation: erodes easily
057PR:				
Pratt	Limitation: deep to water	Limitation: fast intake slope droughty	Limitation: too sandy soil blowing	Limitation: droughty

WATER MANAGEMENT--Continued
Kiowa County, Kansas

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Features affecting--			
	Drainage	Irrigation	Terraces and diversions	Grassed waterways
057PT:				
Pratt	Limitation: deep to water	Limitation: fast intake slope droughty	Limitation: slope too sandy soil blowing	Limitation: slope droughty
Tivoli	Limitation: deep to water	Limitation: fast intake slope droughty	Limitation: slope too sandy soil blowing	Limitation: slope droughty
057TV:				
Tivoli	Limitation: deep to water	Limitation: fast intake slope droughty	Limitation: slope too sandy soil blowing	Limitation: slope droughty
151BC:				
Blanket	Limitation: deep to water	Limitation: erodes easily	Limitation: erodes easily	Limitation: erodes easily
151BH:				
Blanket	Limitation: deep to water	Limitation: erodes easily	Limitation: erodes easily	Limitation: erodes easily
151FE:				
Farnum	Limitation: deep to water	Limitation: soil blowing	Limitation: soil blowing	Favorable
151NM:				
Naron	Limitation: deep to water	Favorable	Favorable	Favorable
151SE:				
Shellabarger	Limitation: deep to water	Limitation: soil blowing	Limitation: too sandy soil blowing	Favorable
1324:				
Carway	Limitation: percs slowly	Limitation: wetness soil blowing	Limitation: erodes easily wetness soil blowing	Limitation: erodes easily percs slowly wetness
Carbika	Limitation: percs slowly ponding	Limitation: percs slowly soil blowing ponding	Limitation: erodes easily soil blowing ponding	Limitation: erodes easily percs slowly wetness
1725:				
Farnum	Limitation: deep to water	Favorable	Favorable	Favorable
Funmar	Limitation: deep to water	Limitation: percs slowly	Limitation: erodes easily percs slowly	Limitation: erodes easily percs slowly
1726:				
Farnum	Limitation: deep to water	Favorable	Favorable	Favorable
Funmar	Limitation: deep to water	Limitation: percs slowly	Limitation: erodes easily percs slowly	Limitation: erodes easily percs slowly
1985:				
Hayes	Limitation: deep to water	Limitation: fast intake soil blowing	Limitation: soil blowing	Favorable
1986:				
Hayes	Limitation: deep to water	Limitation: fast intake soil blowing	Limitation: soil blowing	Favorable
Solvay	Favorable	Limitation: wetness soil blowing	Limitation: wetness soil blowing	Favorable
1988:				
Hayes	Limitation: deep to water	Limitation: fast intake soil blowing	Limitation: soil blowing	Favorable
2556:				
Langdon	Limitation: deep to water	Limitation: fast intake slope droughty	Limitation: too sandy soil blowing	Limitation: droughty
3512:				
Saltcreek	Limitation: deep to water	Limitation: soil blowing	Limitation: erodes easily percs slowly soil blowing	Limitation: erodes easily percs slowly
Naron	Limitation: deep to water	Favorable	Limitation: soil blowing	Favorable
3540:				
Solvay	Favorable	Limitation: wetness soil blowing	Limitation: wetness soil blowing	Favorable

WATER MANAGEMENT--Continued
Kiowa County, Kansas

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Features affecting--			
	Drainage	Irrigation	Terraces and diversions	Grassed waterways
3640:				
Tivin	Limitation: deep to water	Limitation: fast intake slope droughty	Limitation: slope too sandy soil blowing	Limitation: slope droughty
An:				
Albion	Limitation: deep to water	Limitation: soil blowing droughty	Limitation: too sandy soil blowing	Limitation: droughty
As:				
Albion	Limitation: deep to water	Limitation: slope soil blowing droughty	Limitation: slope too sandy soil blowing	Limitation: slope droughty
Shellabarger	Limitation: deep to water	Limitation: slope soil blowing	Limitation: slope soil blowing	Limitation: slope
At:				
Attica	Limitation: deep to water	Limitation: fast intake soil blowing	Limitation: soil blowing	Favorable
Ax:				
Attica	Limitation: deep to water	Limitation: fast intake soil blowing	Limitation: soil blowing	Favorable
Carwile	Limitation: percs slowly ponding	Limitation: wetness soil blowing ponding	Limitation: percs slowly soil blowing ponding	Limitation: percs slowly wetness
BOP:				
Borrow Pits	---	---	---	---
Ca:				
Canadian	Limitation: deep to water	Favorable	Favorable	Favorable
Cc:				
Carwile	Limitation: percs slowly ponding	Limitation: wetness soil blowing ponding	Limitation: percs slowly soil blowing ponding	Limitation: percs slowly wetness
Ce:				
Case	Limitation: deep to water	Limitation: slope	Favorable	Favorable
Cf:				
Case	Limitation: deep to water	Limitation: slope	Limitation: slope	Limitation: slope
Cg:				
Case	Limitation: deep to water	Limitation: slope	Limitation: slope	Limitation: slope
Canlon	Limitation: deep to water	Limitation: slope thin layer	Limitation: area reclaim slope depth to rock	Limitation: area reclaim slope depth to rock
Ck:				
Clark	Limitation: deep to water	Favorable	Favorable	Favorable
Cm:				
Clark	Limitation: deep to water	Limitation: slope	Favorable	Favorable
Co:				
Coly	Limitation: deep to water	Limitation: erodes easily slope	Limitation: erodes easily	Limitation: erodes easily
Cp:				
Coly	Limitation: deep to water	Limitation: erodes easily slope	Limitation: erodes easily slope	Limitation: erodes easily slope
Ct:				
Coly	Limitation: deep to water	Limitation: erodes easily slope	Limitation: erodes easily slope	Limitation: erodes easily slope
Tobin	Limitation: deep to water	Limitation: flooding	Favorable	Favorable
Da:				
Dale	Limitation: deep to water	Limitation: erodes easily	Limitation: erodes easily	Limitation: erodes easily
Fa:				
Farnum	Limitation: deep to water	Favorable	Favorable	Favorable
Fb:				
Farnum	Limitation: deep to water	Favorable	Favorable	Favorable
Ha:				
Harney	Limitation: deep to water	Favorable	Limitation: erodes easily	Limitation: erodes easily

WATER MANAGEMENT--Continued
Kiowa County, Kansas

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Features affecting--			
	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Hb:				
Harney	Limitation: deep to water	Favorable	Limitation: erodes easily	Limitation: erodes easily
He:				
Hedville	Limitation: deep to water	Limitation: slope thin layer soil blowing	Limitation: area reclaim slope depth to rock	Limitation: area reclaim slope depth to rock
Rock Outcrop	---	---	---	---
Ho:				
Holdrege	Limitation: deep to water	Favorable	Limitation: erodes easily	Limitation: erodes easily
Hp:				
Holdrege	Limitation: deep to water	Favorable	Limitation: erodes easily	Limitation: erodes easily
Kr:				
Krier	Limitation: excess salt flooding cutbanks cave	Limitation: wetness soil blowing droughty	Limitation: too sandy wetness soil blowing	Limitation: excess sodium excess salt wetness
Lh:				
Lancaster	Limitation: deep to water	Limitation: slope thin layer	Limitation: area reclaim slope	Limitation: area reclaim slope
Hedville	Limitation: deep to water	Limitation: slope thin layer soil blowing	Limitation: area reclaim slope depth to rock	Limitation: area reclaim slope depth to rock
Ln:				
Lincoln	Limitation: deep to water	Limitation: flooding soil blowing droughty	Limitation: too sandy soil blowing	Limitation: droughty
M-W:				
Miscellaneous Water	---	---	---	---
Na:				
Naron	Limitation: deep to water	Favorable	Limitation: soil blowing	Favorable
Nb:				
Naron	Limitation: deep to water	Favorable	Limitation: soil blowing	Favorable
Ne:				
Ness	Limitation: percs slowly ponding	Limitation: percs slowly slow intake ponding	Limitation: percs slowly ponding	Limitation: percs slowly wetness
Nw:				
New Cambria	Limitation: deep to water	Limitation: percs slowly slow intake	Limitation: percs slowly	Limitation: percs slowly
Oe:				
Owens	Limitation: deep to water	Limitation: percs slowly slope slow intake	Limitation: area reclaim percs slowly slope	Limitation: area reclaim percs slowly slope
Pe:				
Plevna	Limitation: flooding	Limitation: flooding wetness	Limitation: wetness	Limitation: wetness
Pr:				
Pratt	Limitation: deep to water	Limitation: fast intake soil blowing droughty	Limitation: too sandy soil blowing	Limitation: droughty
Ps:				
Pratt	Limitation: deep to water	Limitation: fast intake soil blowing droughty	Limitation: too sandy soil blowing	Limitation: droughty
Pt:				
Pratt	Limitation: deep to water	Limitation: fast intake soil blowing droughty	Limitation: slope too sandy soil blowing	Limitation: slope droughty
Tivoli	Limitation: deep to water	Limitation: fast intake soil blowing droughty	Limitation: slope too sandy soil blowing	Limitation: slope droughty
Qw:				
Quinlan	Limitation: deep to water	Limitation: slope depth to rock	Limitation: slope depth to rock	Limitation: slope depth to rock

WATER MANAGEMENT--Continued
Kiowa County, Kansas

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Features affecting--			
	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Woodward	Limitation: deep to water	Limitation: erodes easily slope depth to rock	Limitation: erodes easily slope depth to rock	Limitation: erodes easily slope depth to rock
SAP:				
Sand Pit	---	---	---	---
Sh:				
Shellabarger	Limitation: deep to water	Limitation: slope	Favorable	Favorable
Th:				
Tivoli	Limitation: deep to water	Limitation: fast intake soil blowing droughty	Limitation: slope too sandy soil blowing	Limitation: slope droughty
To:				
Tobin	Limitation: deep to water	Limitation: flooding	Favorable	Favorable
Ts:				
Tobin	Limitation: deep to water	Limitation: flooding	Favorable	Favorable
Uc:				
Uly	Limitation: deep to water	Limitation: slope	Limitation: erodes easily	Limitation: erodes easily
W:				
Water	---	---	---	---
Wa:				
Waldeck	Limitation: flooding	Limitation: flooding wetness	Limitation: wetness	Favorable

WATER MANAGEMENT--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Pond Reservoir Area		Embankments, Dikes, and Levees		Excavated Ponds (Aquifer-fed)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
007CF:							
Clairemont	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.93	Deep to water	1.00
025AB:							
Albion	60	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.98	Deep to water	1.00
Shellabarger	40	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Seepage	0.09	Deep to water	1.00
025PG:							
Penden	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.08	Deep to water	1.00
		Slope	0.00				
025SH:							
Shellabarger	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Seepage	0.09	Deep to water	1.00
033AC:							
Abilene	100	Somewhat limited		Not limited		Very limited	
		Seepage	0.05			Deep to water	1.00
033CK:							
Case	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.12	Deep to water	1.00
033CS:							
Clark	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.12	Deep to water	1.00
033CT:							
Clark	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.12	Deep to water	1.00
033ED:							
Elandco	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.76	Deep to water	1.00
033EF:							
Elandco	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.76	Deep to water	1.00
033KC:							
Kanza	100	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	0.96		
033LN:							
Lincoln	100	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.56	Deep to water	1.00
033QR:							
Quinlan	55	Very limited		Very limited		Very limited	
		Seepage	1.00	Thin layer	1.00	Deep to water	1.00
		Depth to bedrock	0.69	Piping	1.00		
		Slope	0.00				
Woodward	45	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Piping	1.00	Deep to water	1.00
		Depth to bedrock	0.11	Thin layer	0.86		
		Slope	0.00				
033SH:							
Shellabarger	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Seepage	0.09	Deep to water	1.00
033SM:							
Shellabarger	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Seepage	0.09	Deep to water	1.00
047PA:							
Platte	100	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	0.97		

WATER MANAGEMENT--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Pond Reservoir Area		Embankments, Dikes, and Levees		Excavated Ponds (Aquifer-fed)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
047WA:							
Waldeck	100	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Cutbanks cave	1.00
				Depth to saturated zone	0.43	Deep to water	0.25
057HD:							
Holdrege	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.24	Deep to water	1.00
057PR:							
Pratt	100	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.57	Deep to water	1.00
057PT:							
Pratt	60	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.57	Deep to water	1.00
Tivoli	40	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.99	Deep to water	1.00
057TV:							
Tivoli	100	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.99	Deep to water	1.00
		Slope	0.01				
151BC:							
Blanket	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.33	Deep to water	1.00
151BH:							
Blanket	100	Somewhat limited		Not limited		Very limited	
		Seepage	0.70			Deep to water	1.00
151FE:							
Farnum	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.15	Deep to water	1.00
				Seepage	0.06		
151NM:							
Naron	100	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.08	Deep to water	1.00
151SE:							
Shellabarger	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Seepage	0.09	Deep to water	1.00
1324:							
Carway	50	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Ponding	1.00	Deep to water	1.00
				Depth to saturated zone	1.00		
Carbika	30	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Ponding	1.00	Deep to water	1.00
				Depth to saturated zone	1.00		
				Piping	0.40		
1725:							
Farnum	40	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.01	Deep to water	1.00
Funmar	40	Somewhat limited		Not limited		Very limited	
		Seepage	0.05			Deep to water	1.00
1726:							
Farnum	40	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.01	Deep to water	1.00
Funmar	40	Somewhat limited		Not limited		Very limited	
		Seepage	0.05			Deep to water	1.00
1985:							
Hayes	60	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Piping	0.42	Deep to water	1.00
1986:							
Hayes	55	Very limited		Somewhat limited		Very limited	

WATER MANAGEMENT--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Pond Reservoir Area		Embankments, Dikes, and Levees		Excavated Ponds (Aquifer-fed)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
		Seepage	1.00	Piping	0.42	Deep to water	1.00
Solvay	20	Very limited Seepage	 1.00	Somewhat limited Seepage Depth to saturated zone	 0.44 0.43	Very limited Cutbanks cave Deep to water	 1.00 0.25
1988:							
Hayes	70	Very limited Seepage	 1.00	Somewhat limited Piping	 0.42	Very limited Deep to water	 1.00
2556:							
Langdon	50	Very limited Seepage	 1.00	Somewhat limited Seepage	 0.50	Very limited Deep to water	 1.00
3512:							
Saltcreek	50	Somewhat limited Seepage	 0.70	Not limited		Very limited Deep to water	 1.00
Naron	50	Very limited Seepage	 1.00	Somewhat limited Seepage	 0.55	Very limited Deep to water	 1.00
3540:							
Solvay	90	Very limited Seepage	 1.00	Somewhat limited Seepage Depth to saturated zone	 0.44 0.43	Very limited Cutbanks cave Deep to water	 1.00 0.25
3640:							
Tivin	95	Very limited Seepage Slope	 1.00 0.03	Very limited Seepage	 1.00	Very limited Deep to water	 1.00
An:							
Albion	100	Very limited Seepage	 1.00	Somewhat limited Seepage	 0.98	Very limited Deep to water	 1.00
As:							
Albion	65	Very limited Seepage	 1.00	Somewhat limited Seepage	 0.98	Very limited Deep to water	 1.00
Shellabarger	35	Somewhat limited Seepage	 0.70	Somewhat limited Seepage	 0.10	Very limited Deep to water	 1.00
At:							
Attica	100	Very limited Seepage	 1.00	Somewhat limited Seepage	 0.09	Very limited Deep to water	 1.00
Ax:							
Attica	60	Very limited Seepage	 1.00	Somewhat limited Seepage	 0.09	Very limited Deep to water	 1.00
Carwile	40	Somewhat limited Seepage	 0.57	Very limited Depth to saturated zone	 1.00	Somewhat limited Slow refill Cutbanks cave	 0.30 0.10
BOP:							
Borrow Pits	100	Not rated		Not rated		Not rated	
Ca:							
Canadian	100	Very limited Seepage	 1.00	Very limited Piping Seepage	 1.00 0.09	Very limited Deep to water	 1.00
Cc:							
Carwile	100	Somewhat limited Seepage	 0.57	Very limited Depth to saturated zone	 1.00	Somewhat limited Slow refill Cutbanks cave	 0.30 0.10
Ce:							
Case	100	Somewhat limited Seepage	 0.70	Somewhat limited Piping	 0.12	Very limited Deep to water	 1.00
Cf:							
Case	100	Somewhat limited Seepage	 0.70	Somewhat limited Piping	 0.12	Very limited Deep to water	 1.00

WATER MANAGEMENT--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Pond Reservoir Area		Embankments, Dikes, and Levees		Excavated Ponds (Aquifer-fed)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
		Slope	0.00				
Cg:							
Case	65	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.12	Deep to water	1.00
		Slope	0.00				
Canlon	35	Very limited		Very limited		Very limited	
		Seepage	1.00	Thin layer	1.00	Deep to water	1.00
		Depth to bedrock	1.00	Piping	0.92		
		Slope	0.02				
Ck:							
Clark	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.12	Deep to water	1.00
Cm:							
Clark	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.12	Deep to water	1.00
Co:							
Coly	100	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Piping	1.00	Deep to water	1.00
Cp:							
Coly	100	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Piping	1.00	Deep to water	1.00
		Slope	0.50				
Ct:							
Coly	70	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Piping	1.00	Deep to water	1.00
		Slope	0.03				
Tobin	30	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.64	Deep to water	1.00
Da:							
Dale	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.76	Deep to water	1.00
Fa:							
Farnum	100	Somewhat limited		Not limited		Very limited	
		Seepage	0.70			Deep to water	1.00
Fb:							
Farnum	100	Somewhat limited		Not limited		Very limited	
		Seepage	0.70			Deep to water	1.00
Ha:							
Harney	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.04	Deep to water	1.00
Hb:							
Harney	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.04	Deep to water	1.00
He:							
Hedville	70	Very limited		Very limited		Very limited	
		Seepage	1.00	Thin layer	1.00	Deep to water	1.00
		Depth to bedrock	1.00	Seepage	0.08		
		Slope	0.21				
Rock Outcrop	30	Not rated		Not rated		Not rated	
Ho:							
Holdrege	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.41	Deep to water	1.00
Hp:							
Holdrege	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.41	Deep to water	1.00
Kr:							
Krier	100	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Cutbanks cave	1.00
				Depth to saturated zone	1.00	Salty water	0.50

WATER MANAGEMENT--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Pond Reservoir Area		Embankments, Dikes, and Levees		Excavated Ponds (Aquifer-fed)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
				Salinity	0.12	Deep to water	0.00
Lh:							
Lancaster	65	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Piping	1.00	Deep to water	1.00
		Depth to bedrock	0.34	Thin layer	0.99		
Hedville	35	Very limited		Very limited		Very limited	
		Seepage	1.00	Thin layer	1.00	Deep to water	1.00
		Depth to bedrock	1.00	Seepage	0.08		
		Slope	0.00				
Ln:							
Lincoln	100	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.22	Deep to water	1.00
M-W:							
Miscellaneous Water-	100	Not rated		Not rated		Not rated	
Na:							
Naron	100	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.08	Deep to water	1.00
Nb:							
Naron	100	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.08	Deep to water	1.00
Ne:							
Ness	100	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.43	Ponding	1.00	Slow refill	0.57
				Depth to saturated zone	1.00	Cutbanks cave	0.10
				Hard to pack	0.45		
Nw:							
New Cambria	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.01	Hard to pack	0.73	Deep to water	1.00
Oe:							
Owens	100	Very limited		Very limited		Very limited	
		Seepage	1.00	Thin layer	1.00	Deep to water	1.00
		Depth to bedrock	0.66	Hard to pack	0.50		
		Slope	0.04				
Pe:							
Plevna	100	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	1.00		
Pr:							
Pratt	100	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.57	Deep to water	1.00
Ps:							
Pratt	100	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.57	Deep to water	1.00
Pt:							
Pratt	60	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Deep to water	1.00
Tivoli	40	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.99	Deep to water	1.00
Qw:							
Quinlan	55	Very limited		Very limited		Very limited	
		Seepage	1.00	Thin layer	1.00	Deep to water	1.00
		Depth to bedrock	0.66	Piping	1.00		
		Slope	0.04				
Woodward	45	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Piping	1.00	Deep to water	1.00
		Depth to bedrock	0.19	Thin layer	0.93		
		Slope	0.01				
SAP:							
Sand Pit	100	Not rated		Not rated		Not rated	

WATER MANAGEMENT--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Pond Reservoir Area		Embankments, Dikes, and Levees		Excavated Ponds (Aquifer-fed)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Sh:							
Shellabarger	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Seepage	0.07	Deep to water	1.00
Th:							
Tivoli	100	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.99	Deep to water	1.00
		Slope	0.12				
To:							
Tobin	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.64	Deep to water	1.00
Ts:							
Tobin	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.64	Deep to water	1.00
Uc:							
Uly	100	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Piping	1.00	Deep to water	1.00
W:							
Water	100	Very limited		Very limited		Very limited	
		Seepage	1.00	Hard to pack	1.00	Deep to water	1.00
		Slope	0.50				
Wa:							
Waldeck	100	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Cutbanks cave	1.00
				Depth to saturated zone	0.43	Deep to water	0.25

SANITARY FACILITIES
Kiowa County, Kansas

Sanitary Facilities

The following tables show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. Not limited indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. Slightly limited indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. Somewhat limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

A trench sanitary landfill is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

SANITARY FACILITIES
Kiowa County, Kansas

In an area sanitary landfill, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

SANITARY FACILITIES--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
007CF:					
Clairemont	100	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	0.50	Seepage	0.50
025AB:					
Albion	60	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Slope	0.04	Slope	1.00
Shellabarger	40	Somewhat limited		Very limited	
		Restricted permeability	0.50	Slope	1.00
		Slope	0.04	Seepage	0.50
025PG:					
Penden	100	Somewhat limited		Very limited	
		Restricted permeability	0.50	Slope	1.00
		Slope	0.37	Seepage	0.50
025SH:					
Shellabarger	100	Somewhat limited		Somewhat limited	
		Restricted permeability	0.50	Seepage	0.50
				Slope	0.33
033AC:					
Abilene	100	Very limited		Somewhat limited	
		Restricted permeability	1.00	Slope	0.00
033CK:					
Case	100	Somewhat limited		Somewhat limited	
		Restricted permeability	0.50	Slope	0.67
				Seepage	0.50
033CS:					
Clark	100	Somewhat limited		Somewhat limited	
		Restricted permeability	0.50	Seepage	0.50
				Slope	0.00
033CT:					
Clark	100	Somewhat limited		Somewhat limited	
		Restricted permeability	0.50	Slope	0.67
				Seepage	0.50
033ED:					
Elandco	100	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	0.50	Seepage	0.50
033EF:					
Elandco	100	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	0.50	Seepage	0.50
033KC:					
Kanza	100	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
033LN:					
Lincoln	100	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Filtering capacity	1.00	Seepage	1.00
		Depth to saturated zone	0.08		
033QR:					
Quinlan	55	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	0.37	Slope	1.00
Woodward	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Restricted permeability	0.50	Slope	1.00
		Slope	0.37		
033SH:					
Shellabarger	100	Somewhat limited		Somewhat limited	

SANITARY FACILITIES--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
		Restricted permeability	0.50	Seepage	0.50
				Slope	0.00
033SM:					
Shellabarger	100	Somewhat limited		Somewhat limited	
		Restricted permeability	0.50	Slope	0.67
				Seepage	0.50
047PA:					
Platte	100	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
047WA:					
Waldeck	100	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Filtering capacity	1.00	Seepage	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
057HD:					
Holdrege	100	Somewhat limited		Somewhat limited	
		Restricted permeability	0.50	Seepage	0.50
				Slope	0.00
057PR:					
Pratt	100	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
				Slope	1.00
057PT:					
Pratt	60	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Slope	0.16	Slope	1.00
Tivoli	40	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Slope	0.16	Slope	1.00
057TV:					
Tivoli	100	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Slope	0.84	Slope	1.00
151BC:					
Blanket	100	Very limited		Somewhat limited	
		Restricted permeability	1.00	Seepage	0.50
				Slope	0.09
151BH:					
Blanket	100	Very limited		Somewhat limited	
		Restricted permeability	1.00	Seepage	0.50
				Slope	0.00
151FE:					
Farnum	100	Somewhat limited		Somewhat limited	
		Restricted permeability	0.50	Seepage	0.50
151NM:					
Naron	100	Somewhat limited		Very limited	
		Restricted permeability	0.50	Seepage	1.00
				Slope	0.00
151SE:					
Shellabarger	100	Somewhat limited		Somewhat limited	
		Restricted permeability	0.50	Seepage	0.50
				Slope	0.09
1324:					
Carway	50	Very limited		Very limited	
		Restricted permeability	1.00	Ponding	1.00
		Ponding	1.00	Seepage	0.50
		Depth to saturated zone	1.00		
Carbika	30	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00

SANITARY FACILITIES--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
		Depth to saturated zone	1.00	Seepage	0.50
		Restricted permeability	0.50		
1725:					
Farnum	40	Somewhat limited		Somewhat limited	
		Restricted permeability	0.50	Seepage	0.50
Funmar	40	Very limited		Not limited	
		Restricted permeability	1.00		
1726:					
Farnum	40	Somewhat limited		Somewhat limited	
		Restricted permeability	0.50	Seepage	0.50
				Slope	0.00
Funmar	40	Very limited		Somewhat limited	
		Restricted permeability	1.00	Slope	0.00
1985:					
Hayes	60	Very limited		Very limited	
		Restricted permeability	1.00	Seepage	1.00
				Slope	0.09
1986:					
Hayes	55	Very limited		Very limited	
		Restricted permeability	1.00	Seepage	1.00
				Slope	0.09
Solvay	20	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Restricted permeability	0.68	Depth to saturated zone	1.00
1988:					
Hayes	70	Very limited		Very limited	
		Restricted permeability	1.00	Seepage	1.00
				Slope	0.91
2556:					
Langdon	50	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Slope	0.00	Slope	1.00
3512:					
Saltcreek	50	Very limited		Somewhat limited	
		Restricted permeability	1.00	Seepage	0.50
				Slope	0.00
Naron	50	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Restricted permeability	0.50	Slope	0.00
3540:					
Solvay	90	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Restricted permeability	0.68	Depth to saturated zone	1.00
3640:					
Tivin	95	Very limited		Very limited	
		Filtering capacity	1.00	Slope	1.00
		Slope	1.00	Seepage	1.00
An:					
Albion	100	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
				Slope	0.09
As:					
Albion	65	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Slope	0.16	Slope	1.00
Shellabarger	35	Somewhat limited		Very limited	
		Restricted permeability	0.50	Slope	1.00
		Slope	0.16	Seepage	0.50

SANITARY FACILITIES--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
At:					
Attica	100	Not limited		Very limited	
				Seepage	1.00
				Slope	0.09
Ax:					
Attica	60	Not limited		Very limited	
				Seepage	1.00
				Slope	0.09
Carwile	40	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Seepage	0.32
BOP:					
Borrow Pits	100	Not rated		Not rated	
Ca:					
Canadian	100	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Flooding	0.40	Flooding	0.40
Cc:					
Carwile	100	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Seepage	0.32
Ce:					
Case	100	Somewhat limited		Somewhat limited	
		Restricted permeability	0.50	Slope	0.67
				Seepage	0.50
Cf:					
Case	100	Somewhat limited		Very limited	
		Restricted permeability	0.50	Slope	1.00
		Slope	0.37	Seepage	0.50
Cg:					
Case	65	Somewhat limited		Very limited	
		Restricted permeability	0.50	Slope	1.00
		Slope	0.37	Seepage	0.50
Canlon	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.96	Slope	1.00
				Seepage	0.50
Ck:					
Clark	100	Somewhat limited		Somewhat limited	
		Restricted permeability	0.50	Seepage	0.50
				Slope	0.00
Cm:					
Clark	100	Somewhat limited		Somewhat limited	
		Restricted permeability	0.50	Slope	0.67
				Seepage	0.50
Co:					
Coly	100	Somewhat limited		Very limited	
		Restricted permeability	0.50	Slope	1.00
				Seepage	0.50
Cp:					
Coly	100	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Restricted permeability	0.50	Seepage	0.50
Ct:					
Coly	70	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Restricted permeability	0.50	Seepage	0.50
Tobin	30	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	0.50	Seepage	0.50
Da:					
Dale	100	Somewhat limited		Somewhat limited	
		Restricted permeability	0.50	Seepage	0.50

SANITARY FACILITIES--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
		Flooding	0.40	Flooding	0.40
Fa:					
Farnum	100	Somewhat limited Restricted permeability	0.50	Somewhat limited Seepage	0.50
Fb:					
Farnum	100	Somewhat limited Restricted permeability	0.50	Somewhat limited Seepage	0.50
				Slope	0.00
Ha:					
Harney	100	Very limited Restricted permeability	1.00	Somewhat limited Seepage	0.50
Hb:					
Harney	100	Very limited Restricted permeability	1.00	Somewhat limited Seepage	0.50
				Slope	0.00
He:					
Hedville	70	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
				Seepage	0.50
Rock Outcrop	30	Not rated		Not rated	
Ho:					
Holdrege	100	Somewhat limited Restricted permeability	0.50	Somewhat limited Seepage	0.50
Hp:					
Holdrege	100	Somewhat limited Restricted permeability	0.50	Somewhat limited Seepage	0.50
				Slope	0.00
Kr:					
Krier	100	Very limited Flooding	1.00	Very limited Flooding	1.00
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
Lh:					
Lancaster	65	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock	1.00
		Slope	0.00	Slope	1.00
				Seepage	0.50
Hedville	35	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Slope	0.63	Slope	1.00
				Seepage	0.50
Ln:					
Lincoln	100	Very limited Flooding	1.00	Very limited Flooding	1.00
		Filtering capacity	1.00	Seepage	1.00
		Depth to saturated zone	0.08		
M-W:					
Miscellaneous Water	100	Not rated		Not rated	
Na:					
Naron	100	Somewhat limited Restricted permeability	0.50	Very limited Seepage	1.00
Nb:					
Naron	100	Somewhat limited Restricted permeability	0.50	Very limited Seepage	1.00
				Slope	0.00
Ne:					
Ness	100	Very limited Restricted permeability	1.00	Very limited Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00

SANITARY FACILITIES--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
		Depth to saturated zone	1.00	Seepage	0.18
Nw:					
New Cambria	100	Very limited		Somewhat limited	
		Restricted permeability	1.00	Flooding	0.40
		Flooding	0.40		
Oe:					
Owens	100	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
Pe:					
Plevna	100	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Seepage	1.00
				Depth to saturated zone	1.00
Pr:					
Pratt	100	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
				Slope	0.09
Ps:					
Pratt	100	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Slope	0.00	Slope	1.00
Pt:					
Pratt	60	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Slope	0.16	Slope	1.00
Tivoli	40	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Slope	0.16	Slope	1.00
Qw:					
Quinlan	55	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
Woodward	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	0.84	Slope	1.00
		Restricted permeability	0.50		
SAP:					
Sand Pit	100	Not rated		Not rated	
Sh:					
Shellabarger	100	Somewhat limited		Somewhat limited	
		Restricted permeability	0.50	Seepage	0.50
				Slope	0.33
Th:					
Tivoli	100	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Filtering capacity	1.00	Seepage	1.00
To:					
Tobin	100	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	0.50	Seepage	0.50
Ts:					
Tobin	100	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	0.50	Seepage	0.50
Uc:					
Uly	100	Somewhat limited		Somewhat limited	
		Restricted permeability	0.50	Slope	0.67
				Seepage	0.50
W:					
Water	100	Very limited		Very limited	
		Slope	1.00	Slope	1.00

SANITARY FACILITIES--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Wa:					
Waldeck	100	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00

SANITARY FACILITIES--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
007CF:							
Clairemont	100	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Too clayey	0.50
		Too clayey	0.50				
025AB:							
Albion	60	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00	Slope	0.04	Seepage	1.00
		Slope	0.04			Slope	0.04
						Gravel content	0.01
Shellabarger	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.04	Slope	0.04	Slope	0.04
025PG:							
Penden	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Slope	0.37	Too clayey	0.50
		Slope	0.37			Slope	0.37
025SH:							
Shellabarger	100	Not limited		Not limited		Not limited	
033AC:							
Abilene	100	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
033CK:							
Case	100	Somewhat limited		Not limited		Somewhat limited	
		Too clayey	0.50			Too clayey	0.50
033CS:							
Clark	100	Somewhat limited		Not limited		Somewhat limited	
		Too clayey	0.50			Too clayey	0.50
033CT:							
Clark	100	Somewhat limited		Not limited		Somewhat limited	
		Too clayey	0.50			Too clayey	0.50
033ED:							
Elandco	100	Very limited		Very limited		Not limited	
		Flooding	1.00	Flooding	1.00		
033EF:							
Elandco	100	Very limited		Very limited		Not limited	
		Flooding	1.00	Flooding	1.00		
033KC:							
Kanza	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Too Sandy	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
		Seepage	1.00	Seepage	1.00	Depth to saturated zone	1.00
		Too Sandy	1.00				
033LN:							
Lincoln	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Too Sandy	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
		Seepage	1.00	Seepage	1.00		
		Too Sandy	1.00				
033QR:							
Quinlan	55	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Seepage	1.00	Slope	0.37	Slope	0.37
		Slope	0.37				
Woodward	45	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Seepage	1.00	Slope	0.37	Slope	0.37
		Slope	0.37				
033SH:							
Shellabarger	100	Not limited		Not limited		Not limited	
033SM:							
Shellabarger	100	Not limited		Not limited		Not limited	
047PA:							
Platte	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Too Sandy	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
		Seepage	1.00	Seepage	1.00	Depth to saturated zone	1.00
		Too Sandy	1.00				
047WA:							
Waldeck	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Too Sandy	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
		Seepage	1.00	Seepage	1.00	Depth to saturated zone	0.09
		Too Sandy	1.00				

SANITARY FACILITIES--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
057HD:							
Holdrege	100	Somewhat limited		Not limited		Very limited	
		Too clayey	0.50			Hard to compact	1.00
						Too clayey	0.50
057PR:							
Pratt	100	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Too Sandy	1.00			Too Sandy	0.50
057PT:							
Pratt	60	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Too Sandy	1.00	Slope	0.16	Too Sandy	0.50
		Slope	0.16			Slope	0.16
Tivoli	40	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00	Slope	0.16	Seepage	1.00
		Slope	0.16			Slope	0.16
057TV:							
Tivoli	100	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00	Slope	0.84	Seepage	1.00
		Slope	0.84			Slope	0.84
151BC:							
Blanket	100	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
151BH:							
Blanket	100	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
151FE:							
Farnum	100	Somewhat limited		Not limited		Somewhat limited	
		Too clayey	0.50			Too clayey	0.50
151NM:							
Naron	100	Very limited		Very limited		Not limited	
		Seepage	1.00	Seepage	1.00		
151SE:							
Shellabarger	100	Not limited		Not limited		Not limited	
1324:							
Carway	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too clayey	0.50			Hard to compact	1.00
						Too clayey	0.50
Carbika	30	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too clayey	0.50			Too clayey	0.50
1725:							
Farnum	40	Not limited		Not limited		Not limited	
Funmar	40	Somewhat limited		Not limited		Very limited	
		Too clayey	0.50			Hard to compact	1.00
						Too clayey	0.50
1726:							
Farnum	40	Not limited		Not limited		Not limited	
Funmar	40	Somewhat limited		Not limited		Very limited	
		Too clayey	0.50			Hard to compact	1.00
						Too clayey	0.50
1985:							
Hayes	60	Very limited		Very limited		Very limited	
		Too clayey	1.00	Seepage	1.00	Hard to compact	1.00
1986:							
Hayes	55	Very limited		Very limited		Very limited	
		Too clayey	1.00	Seepage	1.00	Hard to compact	1.00
Solvay	20	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.50
		Seepage	1.00	Seepage	1.00	Depth to saturated zone	0.09
1988:							
Hayes	70	Very limited		Very limited		Very limited	
		Too clayey	1.00	Seepage	1.00	Hard to compact	1.00
2556:							
Langdon	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00	Slope	0.00	Seepage	1.00
		Slope	0.00			Slope	0.00

SANITARY FACILITIES--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
3512:							
Saltcreek	50	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
Naron	50	Very limited		Not limited		Not limited	
		Seepage	1.00				
3540:							
Solvay	90	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.50
		Seepage	1.00	Seepage	1.00	Depth to saturated zone	0.09
3640:							
Tivin	95	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00	Slope	1.00	Seepage	1.00
		Slope	1.00			Slope	1.00
An:							
Albion	100	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00			Seepage	1.00
						Gravel content	0.00
As:							
Albion	65	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00	Slope	0.16	Seepage	1.00
		Slope	0.16			Slope	0.16
						Gravel content	0.00
Shellabarger	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.16	Slope	0.16	Slope	0.16
At:							
Attica	100	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Seepage	1.00	Seepage	0.50
Ax:							
Attica	60	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Seepage	1.00	Seepage	0.50
Carwile	40	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
BOP:							
Borrow Pits	100	Not rated		Not rated		Not rated	
Ca:							
Canadian	100	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Flooding	0.40	Flooding	0.40		
Cc:							
Carwile	100	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
Ce:							
Case	100	Somewhat limited		Not limited		Somewhat limited	
		Too clayey	0.50			Too clayey	0.50
Cf:							
Case	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Slope	0.37	Too clayey	0.50
		Slope	0.37			Slope	0.37
Cg:							
Case	65	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Slope	0.37	Too clayey	0.50
		Slope	0.37			Slope	0.37
Canlon	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Seepage	1.00	Slope	0.96	Slope	0.96
		Slope	0.96				
Ck:							
Clark	100	Somewhat limited		Not limited		Somewhat limited	
		Too clayey	0.50			Too clayey	0.50
Cm:							
Clark	100	Somewhat limited		Not limited		Somewhat limited	
		Too clayey	0.50			Too clayey	0.50
Co:							
Coly	100	Not limited		Not limited		Not limited	
Cp:							
Coly	100	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Ct:							
Coly	70	Very limited		Very limited		Very limited	

SANITARY FACILITIES--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
		Slope	1.00	Slope	1.00	Slope	1.00
Tobin	30	Very limited Flooding	1.00	Very limited Flooding	1.00	Not limited	
Da:							
Dale	100	Somewhat limited Too clayey Flooding	0.50 0.40	Somewhat limited Flooding	0.40	Somewhat limited Too clayey	0.50
Fa:							
Farnum	100	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
Fb:							
Farnum	100	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
Ha:							
Harney	100	Not limited		Not limited		Not limited	
Hb:							
Harney	100	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
He:							
Hedville	70	Very limited Depth to bedrock Slope Seepage	1.00 1.00 1.00	Very limited Depth to bedrock Slope	1.00 1.00	Very limited Depth to bedrock Slope	1.00 1.00
Rock Outcrop	30	Not rated		Not rated		Not rated	
Ho:							
Holdrege	100	Not limited		Not limited		Not limited	
Hp:							
Holdrege	100	Not limited		Not limited		Not limited	
Kr:							
Krier	100	Very limited Flooding Depth to saturated zone Seepage Too Sandy	1.00 1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Seepage	1.00 1.00 1.00	Very limited Too Sandy Seepage Depth to saturated zone	1.00 1.00 0.86
Lh:							
Lancaster	65	Very limited Depth to bedrock Seepage Slope	1.00 1.00 0.00	Very limited Depth to bedrock Slope	1.00 0.00	Very limited Depth to bedrock Slope	1.00 0.00
Hedville	35	Very limited Depth to bedrock Seepage Slope	1.00 1.00 0.63	Very limited Depth to bedrock Slope	1.00 0.63	Very limited Depth to bedrock Slope	1.00 0.63
Ln:							
Lincoln	100	Very limited Flooding Depth to saturated zone Seepage Too Sandy	1.00 1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Seepage	1.00 1.00 1.00	Very limited Seepage Too Sandy	1.00 0.50
M-W:							
Miscellaneous Water	100	Not rated		Not rated		Not rated	
Na:							
Naron	100	Very limited Seepage	1.00	Not limited		Not limited	
Nb:							
Naron	100	Very limited Seepage	1.00	Not limited		Not limited	
Ne:							
Ness	100	Very limited Depth to saturated zone Ponding Too clayey	1.00 1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00	Very limited Ponding Depth to saturated zone Too clayey Hard to compact	1.00 1.00 1.00 1.00
Nw:							
New Cambria	100	Very limited Too clayey Flooding	1.00 0.40	Somewhat limited Flooding	0.40	Very limited Too clayey Hard to compact	1.00 1.00
Oe:							
Owens	100	Very limited Depth to bedrock Too clayey Slope Seepage	1.00 1.00 1.00 1.00	Very limited Depth to bedrock Slope	1.00 1.00	Very limited Depth to bedrock Too clayey Slope Hard to compact	1.00 1.00 1.00 1.00
Pe:							
Plevna	100	Very limited		Very limited		Very limited	

SANITARY FACILITIES--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.50
		Seepage	1.00	Seepage	1.00		
Pr:							
Pratt	100	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Too Sandy	1.00			Too Sandy	0.50
Ps:							
Pratt	100	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Too Sandy	1.00	Slope	0.00	Too Sandy	0.50
		Slope	0.00			Slope	0.00
Pt:							
Pratt	60	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00	Slope	0.16	Seepage	1.00
		Slope	0.16			Slope	0.16
Tivoli	40	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00	Slope	0.16	Seepage	1.00
		Slope	0.16			Slope	0.16
Qw:							
Quinlan	55	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage	1.00				
Woodward	45	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Seepage	1.00	Slope	0.84	Slope	0.84
		Slope	0.84				
SAP:							
Sand Pit	100	Not rated		Not rated		Not rated	
Sh:							
Shellabarger	100	Not limited		Not limited		Not limited	
Th:							
Tivoli	100	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00	Slope	1.00	Seepage	1.00
		Slope	1.00			Slope	1.00
To:							
Tobin	100	Very limited		Very limited		Not limited	
		Flooding	1.00	Flooding	1.00		
Ts:							
Tobin	100	Very limited		Very limited		Not limited	
		Flooding	1.00	Flooding	1.00		
Uc:							
Uly	100	Not limited		Not limited		Not limited	
W:							
Water	100	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Wa:							
Waldeck	100	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Seepage	0.50
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.09
		Seepage	1.00	Seepage	1.00		

AGRICULTURAL WASTE MANAGEMENT
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The nature of the soil is also important in the application of organic wastes and wastewater to land as fertilizers and irrigation; it is also important when the soil is used as a medium for treatment and disposal of these wastes. Favorable soil properties are required to prevent environmental damage.

The use of organic wastes and wastewater as production resources will result in energy conservation, prevent the waste of these important resources, and prevent problems associated with their disposal. Where disposal is the goal, and a maximum amount is disposed in a minimum area to hold costs to a minimum, risk of environmental damage is the principal constraint. Where the reuse goal is pursued, and a minimum amount is applied to a maximum area to obtain the greatest benefit, environmental damage is unlikely.

Interpretations developed for waste management may include ratings for (1) manure and food processing wastes; (2) municipal sewage sludge; (3) irrigation use of wastewater; or (4) treatment of wastewater by the slow rate process, overland flow process, or rapid infiltration process. If available, these should be located in this subsection.

Soil properties are important considerations in areas where soils are used as sites for the treatment and disposal of organic waste and wastewater. Selection of soils with properties that favor waste management can help to prevent environmental damage.

The Ag–Waste tables show the degree and kind of soil limitations affecting the treatment of agricultural waste, including municipal and food–processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food–processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. In the context of these tables, the effluent in lagoons and storage ponds is from facilities used to treat or store food–processing wastewater or domestic or animal waste. Domestic and food–processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30 milligrams per liter. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter. When wastewater is applied, checks should be made to ensure that nitrogen, phosphorus, heavy metals, and salts are not added in excessive amounts.

The ratings in the tables are for waste management systems that not only dispose of and treat organic waste or wastewater but also are beneficial to crops (application of manure and food–processing waste, application of sewage sludge, and disposal of wastewater by irrigation)and for waste management systems that are designed only for the purpose of wastewater disposal and treatment (overland flow of wastewater, rapid infiltration of wastewater, and slow rate treatment of wastewater).

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect agricultural waste management. Not limited indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. Slightly limited indicates that the soil has features that are generally favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. Somewhat limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Application of manure and food–processing waste not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. Manure is the excrement of livestock and poultry, and food–processing waste is damaged fruit and vegetables and the peelings, stems, leaves, pits, and soil particles removed in food preparation. The manure and food–processing waste are either solid, slurry, or liquid. Their nitrogen content varies. A high content of nitrogen limits the application rate. Toxic or otherwise dangerous wastes, such as those mixed with the lye used in food processing, are not considered in the ratings.

The ratings are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the waste is applied, and the method by which the waste is applied. The properties that affect absorption include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, and available water capacity. The properties that affect plant growth and microbial activity include reaction, the sodium adsorption ratio, salinity, and bulk density.The wind erodibility group, the soil erodibility factor K, and slope are consideredin estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Application of sewage sludge not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. In the context of this table, sewage sludge is the residual product of the treatment of municipal sewage. The solid component consists mainly of cell mass, primarily bacteria cells that developed during secondary treatment and have incorporated soluble organics into their own bodies. The sludge has small amounts of sand, silt, and other solid debris. The content of nitrogen varies. Some sludge has constituents that are toxic to plants or hazardous to the food chain, such as heavy metals and exotic organic compounds, and should be analyzed chemically prior to use.

AGRICULTURAL WASTE MANAGEMENT
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The content of water in the sludge ranges from about 98 percent to less than 40 percent. The sludge is considered liquid if it is more than about 90 percent water, slurry if it is about 50 to 90 percent water, and solid if it is less than about 50 percent water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the sludge is applied, and the method by which the sludge is applied. The properties that affect absorption, plant growth, and microbial activity include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, available water capacity, reaction, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of sludge. Permanently frozen soils are unsuitable for waste treatment.

Disposal of wastewater by irrigation not only disposes of municipal wastewater and wastewater from food-processing plants, lagoons, and storage ponds but also can improve crop production by increasing the amount of water available to crops. The ratings in the table are based on the soil properties that affect the design, construction, management, and performance of the irrigation system. The properties that affect design and management include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, slope, and flooding. The properties that affect construction include stones, cobbles, depth to bedrock or a cemented pan, depth to a water table, and ponding.

The properties that affect performance include depth to bedrock or a cemented pan, bulk density, the sodium adsorption ratio, salinity, reaction, and the cation-exchange capacity, which is used to estimate the capacity of a soil to adsorb heavy metals. Permanently frozen soils are not suitable for disposal of wastewater by irrigation.

See the National Soil Handbook, September 1992, Part 620, for criteria used in rating soils for sanitary facilities and waste management.

AGRICULTURAL WASTE MANAGEMENT--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
007CF:							
Clairemont	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
025AB:							
Albion	60	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Slope	0.04	Too acid	0.14	Too steep for surface application	1.00
		Too acid	0.03	Slope	0.04	Too steep for sprinkler application	0.22
		Droughty	0.02	Droughty	0.02	Too acid	0.14
						Droughty	0.02
Shellabarger	40	Somewhat limited		Somewhat limited		Very limited	
		Too acid	0.11	Too acid	0.42	Too steep for surface application	1.00
		Slope	0.04	Slope	0.04	Too acid	0.42
						Too steep for sprinkler application	0.22
025PG:							
Penden	100	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Too steep for surface application	1.00
						Too steep for sprinkler application	0.59
025SH:							
Shellabarger	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Too acid	0.11	Too acid	0.42	Too acid	0.42
						Too steep for surface application	0.08
033AC:							
Abilene	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.30	Restricted permeability	0.22	Restricted permeability	0.22
033CK:							
Case	100	Not limited		Not limited		Somewhat limited	
						Too steep for surface application	0.31
033CS:							
Clark	100	Not limited		Not limited		Not limited	
033CT:							
Clark	100	Not limited		Not limited		Somewhat limited	
						Too steep for surface application	0.31
033ED:							
Elandco	100	Somewhat limited		Very limited		Somewhat limited	
		Flooding	0.60	Flooding	1.00	Flooding	0.60
033EF:							
Elandco	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
033KC:							
Kanza	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Runoff limitation	0.40	Too acid	0.14	Too acid	0.14
		Too acid	0.03	Droughty	0.02	Droughty	0.02
033LN:							
Lincoln	100	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Flooding	1.00	Filtering capacity	1.00
		Droughty	0.96	Filtering capacity	1.00	Droughty	0.96
		Flooding	0.60	Droughty	0.96	Flooding	0.60
		Leaching limitation	0.45				

AGRICULTURAL WASTE MANAGEMENT--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
033QR:							
Quinlan	55	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Slope	0.37	Slope	0.37	Too steep for surface application	1.00
						Too steep for sprinkler application	0.59
Woodward	45	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.46	Depth to bedrock	0.46	Too steep for surface application	1.00
		Slope	0.37	Slope	0.37	Too steep for sprinkler application	0.59
		Droughty	0.15	Droughty	0.15	Depth to bedrock	0.46
						Droughty	0.15
033SH:							
Shellabarger	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Too acid	0.11	Too acid	0.42	Too acid	0.42
033SM:							
Shellabarger	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Too acid	0.11	Too acid	0.42	Too acid	0.42
						Too steep for surface application	0.31
047PA:							
Platte	100	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Depth to saturated zone	1.00	Flooding	1.00	Depth to saturated zone	1.00
		Droughty	0.93	Depth to saturated zone	1.00	Droughty	0.93
		Flooding	0.60	Droughty	0.93	Flooding	0.60
047WA:							
Waldeck	100	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Flooding	0.60	Flooding	1.00	Flooding	0.60
		Depth to saturated zone	0.43	Depth to saturated zone	0.43	Depth to saturated zone	0.43
057HD:							
Holdrege	100	Not limited		Not limited		Not limited	
057PR:							
Pratt	100	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Leaching limitation	0.45	Droughty	0.03	Too steep for surface application	0.91
		Droughty	0.03			Droughty	0.03
						Too steep for sprinkler application	0.02
057PT:							
Pratt	60	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Too steep for surface application	1.00
		Leaching limitation	0.45	Slope	0.16	Filtering capacity	1.00
		Slope	0.16	Droughty	0.03	Too steep for sprinkler application	0.39
		Droughty	0.03			Droughty	0.03
Tivoli	40	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Too steep for surface application	1.00
		Droughty	0.50	Droughty	0.50	Filtering capacity	1.00
		Leaching limitation	0.45	Slope	0.16	Droughty	0.50

AGRICULTURAL WASTE MANAGEMENT--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
		Slope	0.16			Too steep for sprinkler application	0.39
057TV:							
Tivoli	100	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Slope	0.84	Slope	0.84	Too steep for surface application	1.00
		Droughty	0.62	Droughty	0.62	Too steep for sprinkler application	0.89
		Leaching limitation	0.45			Droughty	0.62
151BC:							
Blanket	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.30	Restricted permeability	0.22	Restricted permeability	0.22
						Too steep for surface application	0.00
151BH:							
Blanket	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.30	Restricted permeability	0.22	Restricted permeability	0.22
151FE:							
Farnum	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.00	Filtering capacity	0.00	Filtering capacity	0.00
151NM:							
Naron	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.00	Filtering capacity	0.00	Filtering capacity	0.00
151SE:							
Shellabarger	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Too acid	0.11	Too acid	0.42	Too acid	0.42
						Too steep for surface application	0.00
1324:							
Carway	50	Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Runoff limitation	0.40	Too acid	0.14	Too acid	0.14
		Too acid	0.03	Filtering capacity	0.00	Filtering capacity	0.00
Carbika	30	Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Runoff limitation	0.40	Too acid	0.14	Too acid	0.14
		Too acid	0.03				
1725:							
Farnum	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Too acid	0.00	Too acid	0.01	Too acid	0.01
Funmar	40	Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
1726:							
Farnum	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Too acid	0.00	Too acid	0.01	Too acid	0.01
Funmar	40	Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
1985:							
Hayes	60	Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Too acid	0.02	Too acid	0.07	Too acid	0.07
		Filtering capacity	0.00	Filtering capacity	0.00	Filtering capacity	0.00

AGRICULTURAL WASTE MANAGEMENT--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
						Too steep for surface application	0.00
1986:							
Hayes	55	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Too acid	0.02	Too acid	0.07	Too acid	0.07
						Too steep for surface application	0.00
Solvay	20	Very limited		Somewhat limited		Somewhat limited	
		Depth to dense layer	1.00	Depth to saturated zone	0.43	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Too acid	0.03	Too acid	0.03
		Runoff limitation	0.40	Filtering capacity	0.00	Filtering capacity	0.00
		Too acid	0.01				
		Filtering capacity	0.00				
1988:							
Hayes	70	Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Too acid	0.02	Too acid	0.07	Too steep for surface application	0.66
		Filtering capacity	0.00	Filtering capacity	0.00	Too acid	0.07
						Filtering capacity	0.00
						Too steep for sprinkler application	0.00
2556:							
Langdon	50	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Droughty	0.62	Too acid	0.67	Too steep for surface application	1.00
		Leaching limitation	0.45	Droughty	0.62	Too acid	0.67
		Too acid	0.18	Slope	0.00	Droughty	0.62
		Slope	0.00			Too steep for sprinkler application	0.10
3512:							
Saltcreek	50	Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Too acid	0.73	Too acid	1.00	Too acid	1.00
		Filtering capacity	0.00	Filtering capacity	0.00	Filtering capacity	0.00
Naron	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.00	Filtering capacity	0.00	Filtering capacity	0.00
3540:							
Solvay	90	Very limited		Somewhat limited		Somewhat limited	
		Depth to dense layer	1.00	Depth to saturated zone	0.43	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Too acid	0.03	Too acid	0.03
		Runoff limitation	0.40	Filtering capacity	0.00	Filtering capacity	0.00
		Too acid	0.01				
		Filtering capacity	0.00				
3640:							
Tivin	95	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Slope	1.00	Slope	1.00	Too steep for surface application	1.00

AGRICULTURAL WASTE MANAGEMENT--Continued
Kiowa County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
		Droughty	0.64	Droughty	0.64	Too steep for sprinkler application	1.00
		Leaching limitation	0.45	Too acid	0.01	Droughty	0.64
		Too acid	0.00			Too acid	0.01
An:							
Albion	100	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Too acid	0.03	Too acid	0.14	Too acid	0.14
						Too steep for surface application	0.00
As:							
Albion	65	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Too steep for surface application	1.00
		Slope	0.16	Slope	0.16	Filtering capacity	1.00
		Too acid	0.03	Too acid	0.14	Too steep for sprinkler application	0.39
						Too acid	0.14
Shellabarger	35	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.16	Too acid	0.42	Too steep for surface application	1.00
		Too acid	0.11	Slope	0.16	Too acid	0.42
						Too steep for sprinkler application	0.39
At:							
Attica	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.00	Filtering capacity	0.00	Filtering capacity	0.00
						Too steep for surface application	0.00
Ax:							
Attica	60	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.00	Filtering capacity	0.00	Filtering capacity	0.00
						Too steep for surface application	0.00
Carwile	40	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Runoff limitation	0.40	Too acid	0.07	Too acid	0.07
		Too acid	0.02				
BOP:							
Borrow Pits	100	Not rated		Not rated		Not rated	
Ca:							
Canadian	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.00	Flooding	0.40	Filtering capacity	0.00
				Filtering capacity	0.00		
Cc:							
Carwile	100	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Runoff limitation	0.40	Too acid	0.07	Too acid	0.07
		Too acid	0.02				
Ce:							
Case	100	Not limited		Not limited		Somewhat limited	
						Too steep for surface application	0.31

AGRICULTURAL WASTE MANAGEMENT--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Cf:							
Case	100	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Too steep for surface application	1.00
						Too steep for sprinkler application	0.59
Cg:							
Case	65	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Too steep for surface application	1.00
						Too steep for sprinkler application	0.59
Canlon	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Slope	0.96	Slope	0.96	Too steep for surface application	1.00
		Runoff limitation	0.40			Too steep for sprinkler application	0.97
Ck:							
Clark	100	Not limited		Not limited		Not limited	
Cm:							
Clark	100	Not limited		Not limited		Somewhat limited	
						Too steep for surface application	0.31
Co:							
Coly	100	Not limited		Not limited		Somewhat limited	
						Too steep for surface application	0.91
						Too steep for sprinkler application	0.02
Cp:							
Coly	100	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Too steep for surface application	1.00
						Too steep for sprinkler application	1.00
Ct:							
Coly	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Too steep for surface application	1.00
						Too steep for sprinkler application	1.00
Tobin	30	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
Da:							
Dale	100	Not limited		Somewhat limited		Not limited	
				Flooding	0.40		
Fa:							
Farnum	100	Not limited		Not limited		Not limited	
Fb:							
Farnum	100	Not limited		Not limited		Not limited	
Ha:							
Harney	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.30	Restricted permeability	0.22	Restricted permeability	0.22
Hb:							
Harney	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.30	Restricted permeability	0.22	Restricted permeability	0.22
He:							
Hedville	70	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00

AGRICULTURAL WASTE MANAGEMENT--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
		Slope	1.00	Slope	1.00	Too steep for surface application	1.00
		Runoff limitation	0.40			Too steep for sprinkler application	1.00
Rock Outcrop--------	30	Not rated		Not rated		Not rated	
Ho:							
Holdrege----------	100	Not limited		Not limited		Not limited	
Hp:							
Holdrege----------	100	Not limited		Not limited		Not limited	
Kr:							
Krier----------	100	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Flooding	1.00	Filtering capacity	1.00
		Depth to saturated zone	1.00	Filtering capacity	1.00	Depth to saturated zone	1.00
		Droughty	0.67	Depth to saturated zone	1.00	Droughty	0.67
		Flooding	0.60	Droughty	0.67	Flooding	0.60
		Salinity	0.50	Salinity	0.13	Salinity	0.13
Lh:							
Lancaster----------	65	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.95	Depth to bedrock	0.95	Too steep for surface application	1.00
		Droughty	0.60	Droughty	0.60	Depth to bedrock	0.95
		Too acid	0.03	Too acid	0.14	Droughty	0.60
		Slope	0.00	Slope	0.00	Too acid	0.14
						Too steep for sprinkler application	0.10
Hedville----------	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.63	Slope	0.63	Too steep for surface application	1.00
		Runoff limitation	0.40			Too steep for sprinkler application	0.77
Ln:							
Lincoln----------	100	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Flooding	1.00	Filtering capacity	1.00
		Droughty	0.90	Filtering capacity	1.00	Droughty	0.90
		Flooding	0.60	Droughty	0.90	Flooding	0.60
		Leaching limitation	0.45				
M-W:							
Miscellaneous Water-	100	Not rated		Not rated		Not rated	
Na:							
Naron----------	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.00	Filtering capacity	0.00	Filtering capacity	0.00
Nb:							
Naron----------	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.00	Filtering capacity	0.00	Filtering capacity	0.00
Ne:							
Ness----------	100	Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Runoff limitation	0.40				
Nw:							
New Cambria----------	100	Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00

AGRICULTURAL WASTE MANAGEMENT--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
				Flooding	0.40		
Oe:							
Owens	100	Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Droughty	1.00	Droughty	1.00
		Depth to bedrock	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Too steep for surface application	1.00
		Runoff limitation	0.40			Too steep for sprinkler application	1.00
Pe:							
Plevna	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Runoff limitation	0.40	Filtering capacity	0.00	Filtering capacity	0.00
		Filtering capacity	0.00				
Pr:							
Pratt	100	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Leaching limitation	0.45			Too steep for surface application	0.00
Ps:							
Pratt	100	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Leaching limitation	0.45	Slope	0.00	Too steep for surface application	1.00
		Slope	0.00			Too steep for sprinkler application	0.10
Pt:							
Pratt	60	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Too steep for surface application	1.00
		Leaching limitation	0.45	Slope	0.16	Filtering capacity	1.00
		Slope	0.16			Too steep for sprinkler application	0.39
Tivoli	40	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Too steep for surface application	1.00
		Droughty	0.98	Droughty	0.98	Filtering capacity	1.00
		Leaching limitation	0.45	Slope	0.16	Droughty	0.98
		Slope	0.16			Too steep for sprinkler application	0.39
Qw:							
Quinlan	55	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Slope	1.00	Slope	1.00	Too steep for surface application	1.00
						Too steep for sprinkler application	1.00
Woodward	45	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.84	Slope	0.84	Too steep for surface application	1.00
		Depth to bedrock	0.71	Depth to bedrock	0.71	Too steep for sprinkler application	0.89

AGRICULTURAL WASTE MANAGEMENT--Continued
Kiowa County, Kansas

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Map symbol and soil name	Pct of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
		Droughty	0.38	Droughty	0.38	Depth to bedrock	0.71
						Droughty	0.38
SAP:							
Sand Pit	100	Not rated		Not rated		Not rated	
Sh:							
Shellabarger	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Too acid	0.11	Too acid	0.42	Too acid	0.42
						Too steep for surface application	0.08
Th:							
Tivoli	100	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Too steep for surface application	1.00
		Filtering capacity	1.00	Filtering capacity	1.00	Too steep for sprinkler application	1.00
		Droughty	1.00	Droughty	1.00	Filtering capacity	1.00
		Leaching limitation	0.45			Droughty	1.00
To:							
Tobin	100	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
Ts:							
Tobin	100	Somewhat limited		Very limited		Somewhat limited	
		Flooding	0.60	Flooding	1.00	Flooding	0.60
Uc:							
Uly	100	Not limited		Not limited		Somewhat limited	
						Too steep for surface application	0.31
W:							
Water	100	Very limited		Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00	Low adsorption	1.00
		Low adsorption	1.00	Slope	1.00	Too steep for surface application	1.00
						Too steep for sprinkler application	1.00
Wa:							
Waldeck	100	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Flooding	1.00	Filtering capacity	1.00
		Flooding	0.60	Filtering capacity	1.00	Flooding	0.60
		Depth to saturated zone	0.43	Depth to saturated zone	0.43	Depth to saturated zone	0.43

WIN-PST SPISP II
SOIL SENSITIVITY TO PESTICIDE LOSS RATING REPORT

Soils Data Table: SOIL_KS Sort Order: MUSYM

Kiowa County, Kansas: KS097

MUSYM/SEQ#	COMPONENT/TEXTURE/MU%	HYD	KFACT	SURFACE DEPTH	% OM	SPISP II Ratings: Leaching (SLP)	Solution Runoff (SSRP)	Adsorbed Runoff (SARP)
007CF 1	CLAIREMONT SIL 100%	B	0.43	14"	1.0%	I	I	I
025AB 1	ALBION SL 65%	B	0.20	11"	1.5%	I	I	I
025AB 2	SHELLABARGER SL 35%	B	0.20	12"	1.5%	I	I	I
025PG 1	PENDEN CL 100%	B	0.28	16"	1.5%	I	I	I
025SH 1	SHELLABARGER L 100%	B	0.28	11"	2.0%	I	I	I
033AC 1	ABILENE SIL 100%	C	0.37	8"	2.0%	L	H	H
033CK 1	CLARK L 100%	B	0.28	10"	1.5%	I	I	I
033CS 1	CLARK CL 100%	B	0.28	10"	1.5%	I	I	I
033CT 1	CLARK CL 100%	B	0.28	10"	1.5%	I	I	I
033ED 1	ELANDCO SIL 100%	B	0.43	31"	2.0%	L	I	I
033EF 1	ELANDCO SIL 100%	B	0.43	31"	2.0%	L	I	I
033KC 1	KANZA LFS 100%	D	0.17	10"	2.0%	H (w)	H	H
033LN 1	LINCOLN LS 100%	A	0.17	10"	0.5%	H	L	L
033QR 1	QUINLAN L 55%	C	0.37	15"	0.5%	L	H	H
033QR 2	WOODWARD L 45%	B	0.37	27"	1.3%	I	I	I
033SH 1	SHELLABARGER SL 100%	B	0.20	11"	1.5%	I	I	I
033SM 1	SHELLABARGER SL 100%	B	0.20	11"	1.5%	I	I	I
047PA 1	PLATTE L 100%	B	0.28	9"	2.0%	H (w)	I	I
047WA 1	WALDECK FSL 100%	C	0.20	10"	1.5%	H (w)	H	I
057HD 1	HOLDREGE VFSL 100%	B	0.32	11"	2.0%	I	I	I
057PR 1	PRATT LFS 100%	A	0.17	9"	0.8%	H	L	L
057PT 1	PRATT LFS 60%	A	0.17	9"	0.8%	H	L	L
057PT 2	TIVOLI LFS 40%	A	0.17	6"	0.8%	H	L	L
057TV 1	TIVOLI FS 100%	A	0.15	6"	0.8%	H	L	I (s)
1324 1	CARWAY FSL 50%	D	0.20	7"	0.8%	V	H	H
1324 2	CARBIKA SIL 30%	D	0.24	11"	1.5%	V	H	H
151BC 1	BLANKET SICL 100%	C	0.37	13"	2.0%	L	H	H
151BH 1	BLANKET SIL 100%	C	0.37	13"	2.0%	L	H	H

WIN-PST SPISP II
SOIL SENSITIVITY TO PESTICIDE LOSS RATING REPORT

Soils Data Table: SOIL_KS Sort Order: MUSYM

Kiowa County, Kansas: KS097

151FE 1	FARNUM FSL 100%	B	0.20	11"	1.5% I	I	I
151NM 1	NARON L 100%	B	0.28	11"	2.0% I	I	I
151SE 1	SHELLABARGER FSL 100%	B	0.20	11"	1.5% I	I	I
1725 1	FARNUM L 40%	B	0.28	5"	2.0% I	I	I
1725 2	FUNMAR L 40%	C	0.28	6"	2.0% L	H	H
1726 1	FARNUM L 40%	B	0.28	5"	2.0% I	I	I
1726 2	FUNMAR L 40%	C	0.28	6"	2.0% L	H	H
1985 1	HAYES FSL 60%	B	0.20	8"	0.8% H	I	I
1986 1	HAYES LFS 55%	B	0.17	8"	0.8% H	I	I
1986 2	SOLVAY LFS 20%	D	0.17	5"	0.8% H (w)	H	H
1988 1	HAYES FSL 70%	B	0.20	8"	0.8% H	I	I
2556 1	LANGDON FS 50%	A	0.15	8"	0.5% H	L	L
3512 1	NARON FSL 50%	B	0.20	8"	2.0% I	I	I
3512 2	SALTCREEK FSL 50%	C	0.20	5"	1.5% I	H	I
3540 1	SOLVAY LFS 90%	D	0.17	5"	0.8% H (w)	H	H
3640 1	TIVIN FS 95%	A	0.15	7"	0.5% H	L	I (s)
An 1	ALBION SL 100%	B	0.20	11"	1.5% I	I	I
As 1	ALBION SL 65%	B	0.20	11"	1.5% I	I	I
As 2	SHELLABARGER SL 35%	B	0.20	12"	1.5% I	I	I
At 1	ATTICA LFS 100%	B	0.17	10"	0.8% H	I	I
Ax 1	ATTICA LFS 60%	B	0.17	10"	0.8% H	I	I
Ax 2	CARWILE FSL 40%	D	0.24	15"	2.0% H (w)	H	H
Ca 1	CANADIAN FSL 100%	B	0.20	15"	1.5% I	I	I
Cc 1	CARWILE FSL 100%	D	0.24	10"	2.0% H (w)	H	H
Ce 1	CASE CL 100%	B	0.32	6"	1.3% H	I	I
Cf 1	CASE CL 100%	B	0.32	6"	1.3% H	I	I
Cg 1	CASE CL 65%	B	0.32	6"	1.3% H	I	I
Cg 2	CANLON L 35%	D	0.32	5"	1.3% V	H	H (s)
Ck 1	CLARK L 100%	B	0.28	5"	1.5% H	I	I
Cm 1	CLARK L 100%	B	0.28	10"	1.5% I	I	I

WIN-PST SPISP II
SOIL SENSITIVITY TO PESTICIDE LOSS RATING REPORT

Soils Data Table: SOIL_KS Sort Order: MUSYM

Kiowa County, Kansas: KS097

Co 1	COLY SIL 100%	B	0.43	5"	1.5% H	I	I
Cp 1	COLY SIL 100%	B	0.43	5"	1.5% H	I	H (s)
Ct 1	COLY SIL 70%	B	0.43	5"	1.5% H	I	H (s)
Ct 2	TOBIN SIL 30%	B	0.32	25"	2.5% L	I	I
Da 1	DALE SIL 100%	B	0.37	16"	2.0% I	I	I
Fa 1	FARNUM L 100%	B	0.28	14"	2.0% I	I	I
Fb 1	FARNUM L 100%	B	0.28	11"	2.0% I	I	I
Ha 1	HARNEY SIL 100%	B	0.32	10"	2.0% I	I	I
Hb 1	HARNEY SIL 100%	B	0.32	5"	3.0% I	I	I
He 1	HEDVILLE FSL 70%	D	0.20	11"	2.5% V	H	H (s)
He 2	ROCK OUTCROP 30%	D	0.00	0"	0.0% V	H	I (s)
Ho 1	HOLDREGE SIL 100%	B	0.32	14"	2.0% I	I	I
Hp 1	HOLDREGE SIL 100%	B	0.32	11"	2.0% I	I	I
Kr 1	KRIER SL 100%	D	0.24	5"	1.3% H (w)	H	H
Lh 1	LANCASTER L 65%	B	0.28	13"	2.5% I	I	I
Lh 2	HEDVILLE FSL 35%	D	0.20	11"	2.5% V	H	H (s)
Ln 1	LINCOLN SL 100%	A	0.20	8"	0.5% H	L	L
M-W 1	MISCELLANEOUS WATER 100%		0.00	0"	0.0% ?	?	?
Na 1	NARON FSL 100%	B	0.20	10"	2.0% I	I	I
Nb 1	NARON FSL 100%	B	0.20	10"	2.0% I	I	I
Ne 1	NESS SIC 100%	D	0.28	38"	2.0% H (w)	H	H
Nw 1	NEW CAMBRIA SIC 100%	C	0.28	12"	3.0% L	H	H
Oe 1	OWENS C 100%	D	0.32	6"	1.3% V	H	H (s)
Pe 1	PLEVNA L 100%	D	0.28	9"	2.5% H (w)	H	H
Pr 1	PRATT LFS 100%	A	0.17	12"	0.8% H	L	L
Ps 1	PRATT LFS 100%	A	0.17	8"	0.8% H	L	L
Pt 1	PRATT LFS 65%	A	0.17	8"	0.8% H	L	L
Pt 2	TIVOLI LFS 35%	A	0.17	6"	0.5% H	L	L
Qw 1	QUINLAN L 55%	C	0.37	15"	0.5% L	H	H (s)
Qw 2	WOODWARD L 45%	B	0.37	27"	1.3% I	I	H (s)

WIN-PST SPISP II
SOIL SENSITIVITY TO PESTICIDE LOSS RATING REPORT

Soils Data Table: SOIL_KS Sort Order: MUSYM

Kiowa County, Kansas: KS097

Sh 1	SHELLABARGER L 100%	B	0.28	11"	2.0%	I	I	I
Th 1	TIVOLI FS 100%	A	0.17	6"	0.5%	H	L	I (s)
To 1	TOBIN SIL 100%	B	0.32	25"	2.5%	L	I	I
Ts 1	TOBIN SIL 100%	B	0.32	15"	2.5%	I	I	I
Uc 1	ULY SIL 100%	B	0.32	10"	2.0%	I	I	I
W 1	WATER 100%		0.00	0"	0.0%	?	?	?
Wa 1	WALDECK L 100%	C	0.28	14"	2.0%	H (w)	H	H

(.\REPORTS\SOILS.TXT generated on 12/12/01 at 12:11:15)

H -- High
I -- Intermediate
L -- Low
V -- Very Low

Conditions that affect ratings:
    m   -- There are macropores in the surface horizon deeper than 24"
    w   -- The high water table comes within 24" of the surface during the growing season
    s   -- The field slope is greater than 15%

SPISP II S-Ratings:
   SLP   -- Soil Leaching Potential
   SSRP -- Soil Solution Runoff Potential
   SARP -- Soil Adsorbed Runoff Potential

HYDRIC SOIL INTERPRETATIONS
HYDRIC SOILS LIST
Kiowa County, Kansas

In this section, hydric soils are defined and described and the hydric soils in the survey area are listed. The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for each of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 1995). These criteria are used to identify a phase of a soil series that normally is associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (USDA, 1999) and "Keys to Soil Taxonomy"’ (USDA, 1998) and in the "Soil Survey Manual" (USDA, 1993).

If soils are wet enough for a long enough period to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils in this survey area are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and others, 1996).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units in the Hydric Soil Interpretations table meet the definition of hydric soils and, in addition, have at east one of the hydric soil indicators. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 1996).

Map units that are made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

These map units, in general, do not meet the definition of hydric soils because they do not have one of the hydric soil indicators. A portion of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

HYDRIC SOIL INTERPRETATIONS
HYDRIC SOILS LIST
Kiowa County, Kansas

All mapunits are displayed regardless of hydric status and are listed in alpha-numeric order by mapunit symbol. The "Hydric Soils Criteria" columns indicate the conditions that caused the mapunit component to be classified as "Hydric" or "Non-Hydric". These criteria are defined in "Hydric Soils of the United States" (USDA Miscellaneous Publication No. 1491, June, 1991). See the "Criteria for Hydric Soils" endnote to determine the meaning of these columns. Spot symbols are footnoted at the end of the table.

Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
007CF: CLAIREMONT SOILS, CHANNELED	CLAIREMONT	No	flood plain	---	---	---	---
025AB: ALBION-SHELLABARGER SANDY LOAMS, 6 TO 12 PERCENT SLOPES	ALBION	No	paleoterrace	---	---	---	---
	SHELLABARGER	No	paleoterrace	---	---	---	---
025PG: PENDEN CLAY LOAM, 7 TO 15 PERCENT SLOPES	PENDEN	No	break	---	---	---	---
025SH: SHELLABARGER LOAM, 2 TO 5 PERCENT SLOPES	SHELLABARGER	No	paleoterrace	---	---	---	---
033AC: ABILENE SILT LOAM, 1 TO 3 PERCENT SLOPES	ABILENE	No	paleoterrace	---	---	---	---
033CK: CASE CLAY LOAM, 3 TO 7 PERCENT SLOPES	CASE	No	paleoterrace	---	---	---	---
033CS: CLARK CLAY LOAM, 1 TO 3 PERCENT SLOPES	CLARK	No	paleoterrace	---	---	---	---
033CT: CLARK CLAY LOAM, 3 TO 6 PERCENT SLOPES	CLARK	No	paleoterrace	---	---	---	---
033ED: ELANDCO SILT LOAM, OCCASIONALLY FLOODED	ELANDCO	No	flood plain	---	---	---	---
033EF: ELANDCO SILT LOAM, CHANNELED	ELANDCO	No	flood plain	---	---	---	---
033KC: KANZA LOAMY FINE SAND, FREQUENTLY FLOODED	KANZA	Yes	flood plain	2B3	YES	NO	NO
033LN: LINCOLN LOAMY SAND, OCCASIONALLY FLOODED	LINCOLN	No	flood plain	---	---	---	---
	KANZA	Yes	depression	2B2	YES	NO	NO
033QR: QUINLAN - WOODWARD LOAMS, 6 TO 15 PERCENT SLOPES	QUINLAN	No	hillslope	---	---	---	---
	WOODWARD	No	hillslope	---	---	---	---
033SH: SHELLABARGER SANDY LOAM, 1 TO 3 PERCENT SLOPES	SHELLABARGER	No	paleoterrace	---	---	---	---
033SM: SHELLABARGER SANDY LOAM, 3 TO 6 PERCENT SLOPES	SHELLABARGER	No	paleoterrace	---	---	---	---
047PA: PLATTE SOILS, OCCASIONALLY FLOODED	PLATTE	No	flood plain	---	---	---	---
047WA: WALDECK FINE SANDY LOAM, OCCASIONALLY FLOODED	WALDECK	No	flood plain	---	---	---	---
	UNNAMED HYDRIC SOIL	Yes	drainageway	4,2B3	YES	YES	NO
	Unnamed wet soils	Yes	depression	2B3,3,2A	YES	NO	YES
057HD: HOLDREGE FINE SANDY LOAM, 1 TO 3 PERCENT SLOPES	HOLDREGE	No	plain	---	---	---	---
057PR: PRATT LOAMY FINE SAND, 3 TO 10 PERCENT SLOPES	PRATT	No	dune, paleoterrace	---	---	---	---
	UNNAMED HYDRIC SOILS	Yes	depression	2B3	YES	NO	NO
057PT: PRATT-TIVOLI LOAMY FINE SANDS, 4 TO 15 PERCENT SLOPES	PRATT	No	dune, paleoterrace	---	---	---	---
	TIVOLI	No	dune, paleoterrace	---	---	---	---
	UNNAMED HYDRIC SOILS	Yes	depression	2B3	YES	NO	NO
057TV: TIVOLI FINE SAND, 5 TO 20 PERCENT SLOPES	TIVOLI	No	dune, paleoterrace	---	---	---	---

HYDRIC SOIL INTERPRETATIONS
HYDRIC SOILS LIST
Kiowa County, Kansas

All mapunits are displayed regardless of hydric status and are listed in alpha-numeric order by mapunit symbol. The "Hydric Soils Criteria" columns indicate the conditions that caused the mapunit component to be classified as "Hydric" or "Non-Hydric". These criteria are defined in "Hydric Soils of the United States" (USDA Miscellaneous Publication No. 1491, June, 1991). See the "Criteria for Hydric Soils" endnote to determine the meaning of these columns. Spot symbols are footnoted at the end of the table.

Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
151BC:							
BLANKET SILTY CLAY LOAM, 1 TO 4 PERCENT SLOPES, ERODED	BLANKET	No	paleoterrace	---	---	---	---
151BH:							
BLANKET SILT LOAM, 1 TO 3 PERCENT SLOPES	BLANKET	No	paleoterrace	---	---	---	---
151FE:							
FARNUM FINE SANDY LOAM, 0 TO 1 PERCENT SLOPES	FARNUM	No	paleoterrace	---	---	---	---
	CARWILE	Yes	depression, paleoterrace	2A	YES	NO	NO
	Unnamed wet soils	Yes	depression	3,2A	YES	NO	YES
151NM:							
NARON LOAM, 1 TO 3 PERCENT SLOPES	NARON	No	dune, paleoterrace	---	---	---	---
	CARWILE	Yes	depression, paleoterrace	2A	YES	NO	NO
	Unnamed wet soils	Yes	depression	3,2B3,4,2A	YES	YES	YES
151SE:							
SHELLABARGER FINE SANDY LOAM, 1 TO 4 PERCENT SLOPES	SHELLABARGER	No	paleoterrace	---	---	---	---
	Unnamed wet soils	Yes	drainageway	2A,2B3	YES	NO	NO
1324:							
CARWAY AND CARBIKA SOILS, 0 TO 1 PERCENT SLOPES	CARWAY	Yes	depression, interdune, paleoterrace	2B3,3	YES	NO	YES
	CARBIKA	Yes	depression, interdune, paleoterrace	3,2B3	YES	NO	YES
	SOLVAY	No	interdune, paleoterrace	---	---	---	---
1725:							
FARNUM AND FUNMAR LOAMS, 0 TO 1 PERCENT SLOPES	FARNUM	No	paleoterrace	---	---	---	---
	FUNMAR	No	paleoterrace	---	---	---	---
	NARON	No	dune, paleoterrace	---	---	---	---
	CARBIKA	Yes	depression, interdune, paleoterrace	2B3,3	YES	NO	YES
	CARWAY	Yes	depression, interdune, paleoterrace	2B3,3	YES	NO	YES
1726:							
FUNMAR AND FARNUM LOAMS, 1 TO 3 PERCENT SLOPES	FARNUM	No	paleoterrace	---	---	---	---
	FUNMAR	No	paleoterrace	---	---	---	---
	NARON	No	dune, paleoterrace	---	---	---	---
	CARBIKA	Yes	depression, interdune, paleoterrace	2B3,3	YES	NO	YES
	CARWAY	Yes	depression, interdune, paleoterrace	3,2B3	YES	NO	YES
1985:							
HAYES FINE SANDY LOAM, 1 TO 5 PERCENT SLOPES	HAYES	No	dune, paleoterrace	---	---	---	---
	ATTICA	No	dune, paleoterrace	---	---	---	---
	SALTCREEK	No	dune, paleoterrace	---	---	---	---
1986:							
HAYES-SOLVAY LOAMY FINE SANDS, 0 TO 5 PERCENT SLOPES	HAYES	No	dune, paleoterrace	---	---	---	---
	SOLVAY	No	interdune, paleoterrace	---	---	---	---
	CARWAY	Yes	depression, interdune, paleoterrace	2B3,3	YES	NO	YES
	FARNUM	No	paleoterrace	---	---	---	---

HYDRIC SOIL INTERPRETATIONS
HYDRIC SOILS LIST
Kiowa County, Kansas

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
1988:							
HAYES LOAMY FINE SAND, 5 TO 10 PERCENT SLOPES	HAYES	No	dune, paleoterrace	---	---	---	---
	PRATT	No	dune, paleoterrace	---	---	---	---
2556:							
LANGDON FINE SAND, 0 TO 15 PERCENT SLOPES	LANGDON	No	dune, paleoterrace	---	---	---	---
	TIVIN	No	dune, paleoterrace	---	---	---	---
	TURON	No	dune, paleoterrace	---	---	---	---
	CARWAY	Yes	depression, interdune, paleoterrace	3,2B3	YES	NO	YES
	WARNUT	Yes	interdune, depression, paleoterrace	2B3,3	YES	NO	YES
3512:							
SALTCREEK AND NARON FINE SANDY LOAMS, 1 TO 3 PERCENT SLOPES	SALTCREEK	No	dune, paleoterrace	---	---	---	---
	NARON	No	dune, paleoterrace	---	---	---	---
	FUNMAR	No	paleoterrace	---	---	---	---
	CARBIKA	Yes	depression, interdune, paleoterrace	2B3,3	YES	NO	YES
	CARWAY	Yes	depression, interdune, paleoterrace	2B3,3	YES	NO	YES
	TAVER	No	paleoterrace	---	---	---	---
3540:							
SOLVAY LOAMY FINE SAND, 0 TO 2 PERCENT SLOPES	SOLVAY	No	interdune, paleoterrace	---	---	---	---
	HAYES	No	dune, paleoterrace	---	---	---	---
	CARBIKA	Yes	depression, interdune, paleoterrace	2B3,3	YES	NO	YES
	CARWAY	Yes	depression, interdune, paleoterrace	3,2B3	YES	NO	YES
3640:							
TIVIN FINE SAND, 10 TO 30 PERCENT SLOPES	TIVIN	No	dune, paleoterrace	---	---	---	---
	LANGDON	No	dune, paleoterrace	---	---	---	---
	PLEV	Yes	depression, interdune, paleoterrace	2B2	YES	NO	NO
An:							
ALBION SANDY LOAM, 1 TO 4 PERCENT SLOPES	ALBION	No	paleoterrace	---	---	---	---
As:							
ALBION-SHELLABARGER SANDY LOAMS, 4 TO 15 PERCENT SLOPES	ALBION	No	paleoterrace	---	---	---	---
	SHELLABARGER	No	paleoterrace	---	---	---	---
	Unnamed wet soils	Yes	drainageway	2A,2B3,2B2	YES	NO	NO
At:							
ATTICA LOAMY FINE SAND, 1 TO 4 PERCENT SLOPES	ATTICA	No	dune, paleoterrace	---	---	---	---
	CARWILE	Yes	depression	2A	YES	NO	NO
	Unnamed wet soils	Yes	depression	3,2B3,2A,4	YES	YES	YES
Ax:							
ATTICA-CARWILE COMPLEX, 0 TO 4 PERCENT SLOPES	ATTICA	No	paleoterrace	---	---	---	---
	CARWILE	Yes	depression	2A	YES	NO	NO
	Unnamed wet soils	Yes	depression	2B2,3,4	YES	YES	YES
BOP:							
Borrow Pits	BORROW PITS	Unranked	---	---	---	---	---
Ca:							
CANADIAN FINE SANDY LOAM, RARELY FLOODED	CANADIAN	No	flood plain	---	---	---	---

HYDRIC SOIL INTERPRETATIONS
HYDRIC SOILS LIST
Kiowa County, Kansas

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
Cc: CARWILE FINE SANDY LOAM, 0 TO 1 PERCENT SLOPES	CARWILE	Yes	depression	2A,3	YES	NO	YES
Ce: CASE CLAY LOAM, 2 TO 7 PERCENT SLOPES	CASE	No	paleoterrace	---	---	---	---
Cf: CASE CLAY LOAM, 7 TO 15 PERCENT SLOPES	CASE	No	paleoterrace	---	---	---	---
Cg: CASE-CANLON COMPLEX, 7 TO 20 PERCENT SLOPES	CASE	No	paleoterrace	---	---	---	---
	CANLON	No	break	---	---	---	---
Ck: CLARK LOAM, 1 TO 3 PERCENT SLOPES	CLARK	No	paleoterrace	---	---	---	---
Cm: CLARK LOAM, 3 TO 7 PERCENT SLOPES	CLARK	No	paleoterrace	---	---	---	---
Co: COLY SILT LOAM, 4 TO 9 PERCENT SLOPES	COLY	No	hillslope	---	---	---	---
	Unnamed wet soils	Yes	drainageway	2B3	YES	NO	NO
Cp: COLY SILT LOAM, 20 TO 40 PERCENT SLOPES	COLY	No	hillslope	---	---	---	---
Ct: COLY-TOBIN SILT LOAMS, 0 TO 20 PERCENT SLOPES	COLY	No	hillslope	---	---	---	---
	TOBIN	No	flood plain	---	---	---	---
	Unnamed wet soils	Yes	drainageway	2A,2B3,4	YES	YES	NO
Da: DALE SILT LOAM, RARELY FLOODED	DALE	No	flood plain	---	---	---	---
Fa: FARNUM LOAM, 0 TO 1 PERCENT SLOPES	FARNUM	No	paleoterrace	---	---	---	---
	CARWILE	Yes	depression	2A	YES	NO	NO
Fb: FARNUM LOAM, 1 TO 3 PERCENT SLOPES	FARNUM	No	paleoterrace	---	---	---	---
	Unnamed wet soils	Yes	drainageway	2A,2B3	YES	NO	NO
Ha: HARNEY SILT LOAM, 0 TO 1 PERCENT SLOPES	HARNEY	No	plain	---	---	---	---
	NESS	Yes	depression	2B3	YES	NO	NO
Hb: HARNEY SILT LOAM, 1 TO 3 PERCENT SLOPES	HARNEY	No	plain	---	---	---	---
He: HEDVILLE-ROCK OUTCROP COMPLEX, 15 TO 30 PERCENT SLOPES	HEDVILLE	No	hillslope	---	---	---	---
	ROCK OUTCROP	Unranked	break	---	---	---	---
Ho: HOLDREGE SILT LOAM, 0 TO 1 PERCENT SLOPES	HOLDREGE	No	plain	---	---	---	---
Hp: HOLDREGE SILT LOAM, 1 TO 3 PERCENT SLOPES	HOLDREGE	No	plain	---	---	---	---
Kr: KRIER SANDY LOAM, OCCASIONALLY FLOODED	KRIER	No	flood plain	---	---	---	---
	Unnamed wet soils	Yes	depression	2A,2B3	YES	NO	NO
Lh: LANCASTER-HEDVILLE COMPLEX, 4 TO 20 PERCENT SLOPES	LANCASTER	No	hillslope	---	---	---	---
	HEDVILLE	No	hillslope	---	---	---	---
Ln: LINCOLN SANDY LOAM, OCCASIONALLY FLOODED	LINCOLN	No	flood plain	---	---	---	---
	PLEVNA	Yes	depression	2B3,4	YES	YES	NO
	Unnamed wet soils	Yes	drainageway	2A,2B3,2B2	YES	NO	NO
M-W: MISCELLANEOUS WATER	MISCELLANEOUS WATER	Unranked	---	---	---	---	---

HYDRIC SOIL INTERPRETATIONS
HYDRIC SOILS LIST
Kiowa County, Kansas

All mapunits are displayed regardless of hydric status and are listed in alpha-numeric order by mapunit symbol. The "Hydric Soils Criteria" columns indicate the conditions that caused the mapunit component to be classified as "Hydric" or "Non-Hydric". These criteria are defined in "Hydric Soils of the United States" (USDA Miscellaneous Publication No. 1491, June, 1991). See the "Criteria for Hydric Soils" endnote to determine the meaning of these columns. Spot symbols are footnoted at the end of the table.

Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
Na:							
NARON FINE SANDY LOAM, 0 TO 1 PERCENT SLOPES	NARON	No	paleoterrace	---	---	---	---
	CARWILE	Yes	depression	2A	YES	NO	NO
	Unnamed wet soils	Yes	depression	2A,3,2B3	YES	NO	YES
Nb:							
NARON FINE SANDY LOAM, 1 TO 3 PERCENT SLOPES	NARON	No	paleoterrace	---	---	---	---
	CARWILE	Yes	depression	2A	YES	NO	NO
	Unnamed wet soils	Yes	depression	2A,3,2B3,4	YES	YES	YES
Ne:							
NESS SILTY CLAY	NESS	Yes	playa	2B3,3	YES	NO	YES
Nw:							
NEW CAMBRIA SILTY CLAY, RARELY FLOODED	NEW CAMBRIA	No	stream terrace	---	---	---	---
Oe:							
WELLSFORD CLAY, 6 TO 25 PERCENT SLOPES	OWENS	No	hillslope	---	---	---	---
Pe:							
PLEVNA LOAM, FREQUENTLY FLOODED	PLEVNA	Yes	flood plain	2B3,4	YES	YES	NO
	Unnamed wet soils	Yes	drainageway	2A,2B3,2B2	YES	NO	NO
Pr:							
PRATT LOAMY FINE SAND, 1 TO 5 PERCENT SLOPES	PRATT	No	dune, paleoterrace	---	---	---	---
	CARWILE	Yes	depression, paleoterrace	2A	YES	NO	NO
	Unnamed wet soils	Yes	depression	2A,2B3,3	YES	NO	YES
Ps:							
PRATT LOAMY FINE SAND, 5 TO 10 PERCENT SLOPES	PRATT	No	dune, paleoterrace	---	---	---	---
	CARWILE	Yes	depression	2A	YES	NO	NO
Pt:							
PRATT-TIVOLI LOAMY FINE SANDS, 5 TO 15 PERCENT SLOPES	PRATT	No	dune, paleoterrace	---	---	---	---
	TIVOLI	No	dune, paleoterrace	---	---	---	---
Qw:							
QUINLAN-WOODWARD LOAMS, 6 TO 25 PERCENT SLOPES	QUINLAN	No	---	---	---	---	---
	WOODWARD	No	---	---	---	---	---
SAP:							
Sand Pits	SAND PIT	Unranked	---	---	---	---	---
Sh:							
SHELLABARGER LOAM, 2 TO 6 PERCENT SLOPES	SHELLABARGER	No	paleoterrace	---	---	---	---
Th:							
TIVOLI FINE SAND, 15 TO 30 PERCENT SLOPES	TIVOLI	No	dune, paleoterrace	---	---	---	---
To:							
TOBIN SILT LOAM, CHANNELED	TOBIN	No	flood plain	---	---	---	---
Ts:							
TOBIN SILT LOAM, OCCASIONALLY FLOODED	TOBIN	No	flood plain	---	---	---	---
Uc:							
ULY SILT LOAM, 3 TO 7 PERCENT SLOPES	ULY	No	hillslope	---	---	---	---
W:							
WATER	WATER	Unranked	---	---	---	---	---
Wa:							
WALDECK LOAM, OCCASIONALLY FLOODED	WALDECK	No	flood plain	---	---	---	---
	Unnamed wet soils	Yes	drainageway	2A,2B3,2B2	YES	NO	NO

HYDRIC SOIL INTERPRETATIONS
HYDRIC SOILS LIST
Kiowa County, Kansas

All mapunits are displayed regardless of hydric status and are listed in alpha-numeric order by mapunit symbol. The "Hydric Soils Criteria" columns indicate the conditions that caused the mapunit component to be classified as "Hydric" or "Non-Hydric". These criteria are defined in "Hydric Soils of the United States" (USDA Miscellaneous Publication No. 1491, June, 1991). See the "Criteria for Hydric Soils" endnote to determine the meaning of these columns. Spot symbols are footnoted at the end of the table.

Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria

FOOTNOTE: There may be small areas of included soils or miscellaneous areas that are significant to use and management of the soil; yet are too small to delineate on the soil map at the map's original scale. These may be designated as spot symbols and are defined in the published Soil Survey Report or the USDA-NRCS Technical Guide, Part II.
Areas mapped as water or any map unit that contains one of the following conventional symbols is considered a hydric soil map unit: marshes or swamps; wet spots; depressions; streams, lakes and ponds.

1. All Histosols except Folists, or
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Aquisalids, Pachic subgroups, or Cumulic subgroups that are:

   a. Somewhat poorly drained with a water table equal to 0.0 foot (ft) from the surface during the growing season, or

   b. poorly drained or very poorly drained and have either:

      (1) water table equal to 0.0 ft during the growing season if textures are coarse sand, sand, or fine sand in all layers within 20 inches (in),

      or for other soils

      (2) water table at less than or equal to 0.5 ft from the surface during the growing season if permeability is equal to or greater than 6.0 in/hour (h) in all layers within 20 in, or

      (3) water table at less than or equal to 1.0 ft from the surface during the growing season if permeability is less than 6.0 in/h in any layer within 20 in, or

3. Soils that are frequently ponded for long duration or very long duration during the growing season, or

4. Soils that are frequently flooded for long duration or very long duration during the growing season.